GenCore version 5.1.6
Copyright (c) 1993 - 2005 Compugen Ltd.

OM protein - protein search, using sw model

Run on: August 23, 2005, 14:17:43 ; Search time 76 Seconds
(without alignments)
839.677 Million cell updates/sec

Title: US-10-706-701-1
Perfect score: 846
Sequence: 1 APPRLICDSRVLERYLLEAK.....SNFLRGKLKLYTGEACRTGD 165

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 2105692 seqs, 386760381 residues

Total number of hits satisfying chosen parameters: 119

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 100%
Maximum Match 100%
Listing first 500 summaries

Database : A_Geneseq_16Dec04:*
1: geneseqp1980s:*
2: geneseqp1990s:*
3: geneseqp2000s:*
4: geneseqp2001s:*
5: geneseqp2002s:*
6: geneseqp2003as:*
7: geneseqp2003bs:*
8: geneseqp2004s:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Query Match	Length	DB	ID	Description
1	846	100.0	165	3	AAY93445	Aay93445 Amino aci
2	846	100.0	165	3	AAB03760	Aab03760 Human ery
3	846	100.0	165	3	AAY94605	Aay94605 Human ery
4	846	100.0	165	3	AAY99705	Aay99705 Non-glyco
5	846	100.0	165	4	AAB84525	Aab84525 Amino aci
6	846	100.0	165	4	ABB83621	Abb83621 Protein #
7	846	100.0	165	4	AAB66697	Aab66697 Human ery
8	846	100.0	165	5	AAM53061	Aam53061 Human ery
9	846	100.0	165	5	ABB77896	Abb77896 Amino aci
10	846	100.0	165	6	ABP98492	Abp98492 Amino aci
11	846	100.0	165	6	ABR39995	Abr39995 Human ery
12	846	100.0	165	8	ADL06780	Adl06780 Human 165
13	846	100.0	165	8	ADN49745	Adn49745 Mature hu
14	846	100.0	165	8	ADO59415	Ado59415 Human 165
15	846	100.0	166	1	AAP70398	Aap70398 Sequence
16	846	100.0	166	2	AAR23593	Aar23593 Recombina
17	846	100.0	166	2	AAW58404	Aaw58404 Human ery
18	846	100.0	166	2	AAW77780	Aaw77780 Human EPO
19	846	100.0	166	3	ABB07030	Abb07030 Modified
20	846	100.0	166	4	ABB83622	Abb83622 Protein #
21	846	100.0	166	4	AAE02641	Aae02641 Human ery
22	846	100.0	166	4	AAB66698	Aab66698 Human ery
23	846	100.0	166	5	ABG92101	Abg92101 Human ery
24	846	100.0	166	5	AAM53062	Aam53062 Human ery
25	846	100.0	166	5	ABB77897	Abb77897 Amino aci
26	846	100.0	166	5	ADG65661	Adg65661 Human ery
27	846	100.0	166	6	ABR39996	Abr39996 Human ery
28	846	100.0	166	6	ABR57500	Abr57500 Human ery
29	846	100.0	166	7	ADF70839	Adf70839 Human ery
30	846	100.0	166	8	ADL92150	Adl92150 Erythropo
31	846	100.0	166	8	ADK70564	Adk70564 Human ery
32	846	100.0	166	8	ADL88867	Adl88867 Human cyt
33	846	100.0	166	8	ADL06781	Adl06781 Human 166
34	846	100.0	166	8	ADO59416	Ado59416 Human 166
35	846	100.0	167	1	AAP50299	Aap50299 Human rec
36	846	100.0	167	1	AAP50298	Aap50298 Human rec
37	846	100.0	169	5	ABB77899	Abb77899 Amino aci
38	846	100.0	174	5	ABB77898	Abb77898 Amino aci
39	846	100.0	174	5	ABB77900	Abb77900 Amino aci
40	846	100.0	188	1	AAP60599	Aap60599 Clone lam
41	846	100.0	188	1	AAP81195	Aap81195 Erythropo
42	846	100.0	192	7	ADF16588	Adf16588 Human alb
43	846	100.0	192	7	ADF16589	Adf16589 Human alb
44	846	100.0	192	7	ADF15305	Adf15305 Human alb
45	846	100.0	192	7	ADF16727	Adf16727 Human alb
46	846	100.0	192	7	ADF16726	Adf16726 Human alb
47	846	100.0	192	7	ADF15296	Adf15296 Human alb
48	846	100.0	192	7	ADF16728	Adf16728 Human alb
49	846	100.0	192	7	ADF15295	Adf15295 Human alb
50	846	100.0	192	7	ADF16587	Adf16587 Human alb
51	846	100.0	193	1	AAP50300	Aap50300 Human ery
52	846	100.0	193	1	AAP60597	Aap60597 Clone lam
53	846	100.0	193	1	AAP70256	Aap70256 Sequence
54	846	100.0	193	2	AAR65499	Aar65499 Human pre
55	846	100.0	193	2	AAR71137	Aar71137 Human ery
56	846	100.0	193	2	AAR74141	Aar74141 Human ery
57	846	100.0	193	2	AAR81982	Aar81982 Human ery
58	846	100.0	193	2	AAR98397	Aar98397 Human ery
59	846	100.0	193	3	AAY43398	Aay43398 Human ery
60	846	100.0	193	3	AAY94530	Aay94530 Human ery
61	846	100.0	193	3	AAY93638	Aay93638 Amino aci
62	846	100.0	193	3	AAY99704	Aay99704 Human non
63	846	100.0	193	4	AAB34978	Aab34978 Human ery
64	846	100.0	193	4	AAB85573	Aab85573 Human ery
65	846	100.0	193	5	AAE15341	Aae15341 Human ery
66	846	100.0	193	6	AAE32131	Aae32131 Human ery
67	846	100.0	193	8	ADF93283	Adf93283 Human EPO
68	846	100.0	193	8	ADH44002	Adh44002 Mutant hu
69	846	100.0	193	8	ADH43900	Adh43900 Human ery
70	846	100.0	193	8	ADH43912	Adh43912 Mutant hu
71	846	100.0	193	8	ADH78700	Adh78700 Human ery
72	846	100.0	193	8	ADL06801	Adl06801 Human 165
73	846	100.0	193	8	ADO59436	Ado59436 Human 165
74	846	100.0	194	2	AAR71167	Aar71167 Human ery
75	846	100.0	194	2	AAW62048	Aaw62048 Human ery
76	846	100.0	194	3	AAB10654	Aab10654 Human ery
77	846	100.0	194	8	ADL06826	Adl06826 Human 165
78	846	100.0	194	8	ADO59461	Ado59461 Human 165
79	846	100.0	196	5	ABB77902	Abb77902 Amino aci
80	846	100.0	201	5	ABB77901	Abb77901 Amino aci
81	846	100.0	201	5	ABB77903	Abb77903 Amino aci
82	846	100.0	205	8	ADJ71846	Adj71846 Non-glyco
83	846	100.0	209	7	ADO79063	Ado79063 Human thr
84	846	100.0	220	5	ABB79939	Abb79939 Human ery
85	846	100.0	220	7	ABR57656	Abr57656 Fusion pr
86	846	100.0	302	2	AAR23596	Aar23596 Recombina
87	846	100.0	303	2	AAR23598	Aar23598 Recombina
88	846	100.0	321	2	AAR23075	Aar23075 IL-3:Epo
89	846	100.0	321	2	AAR23597	Aar23597 Recombina
90	846	100.0	322	2	AAR23599	Aar23599 Recombina
91	846	100.0	330	2	AAR23076	Aar23076 Epo:IL-3
92	846	100.0	340	2	AAR23078	Aar23078 IL-3:Epo
93	846	100.0	349	2	AAR23079	Aar23079 Epo:IL-3
94	846	100.0	370	7	ADO79062	Ado79062 Human thr
95	846	100.0	376	2	AAW99360	Aaw99360 Human ery
96	846	100.0	428	7	ABU64200	Abu64200 Plasmid p
97	846	100.0	428	8	ADO10513	Ado10513 EPO signa
98	846	100.0	435	7	ADM33857	Adm33857 Human HuE

99	846	100.0	435	8	ADR48988	Adr48988 HuEPO-L-v
100	846	100.0	436	7	ADM33853	Adm33853 Human HuE
101	846	100.0	436	8	ADR48984	Adr48984 HuEPO-L-F
102	846	100.0	437	7	ADM33855	Adm33855 Human HuE
103	846	100.0	437	8	ADR48986	Adr48986 HuEPO-L-v
104	846	100.0	768	7	ADF16565	Adf16565 Human alb
105	846	100.0	768	7	ADF16425	Adf16425 Human alb
106	846	100.0	768	7	ADF16564	Adf16564 Human alb
107	846	100.0	768	7	ADF16426	Adf16426 Human alb
108	846	100.0	768	7	ADF16424	Adf16424 Human alb
109	846	100.0	768	7	ADF16563	Adf16563 Human alb
110	846	100.0	769	7	ADF15091	Adf15091 Human alb
111	846	100.0	777	7	ADF15082	Adf15082 Human alb
112	846	100.0	777	7	ADF15078	Adf15078 Human alb
113	846	100.0	777	7	ADF15075	Adf15075 Human alb
114	846	100.0	777	7	ADF15071	Adf15071 Human alb
115	846	100.0	777	7	ADF15079	Adf15079 Human alb
116	846	100.0	777	7	ADF15081	Adf15081 Human alb
117	846	100.0	951	7	ADF15113	Adf15113 Human alb
118	846	100.0	951	7	ADF15108	Adf15108 Human alb
119	846	100.0	954	7	ADF15105	Adf15105 Human alb

ALIGNMENTS

RESULT 1
AAY93445
ID AAY93445 standard; protein; 165 AA.
XX
AC AAY93445;
XX
DT 04-SEP-2000 (first entry)
XX
DE Amino acid sequence of human erythropoietin.
XX
KW Human; erythropoietin; EPO; anaemia; renal failure.
XX
OS Homo sapiens.
XX
PN WO200028066-A1.
XX
PD 18-MAY-2000.
XX
PF 08-NOV-1999; 99WO-US026238.
XX
PR 06-NOV-1998; 98AR-00105609.
PR 23-FEB-1999; 99AR-00100679.
XX
PA (STER-) STERRENBELD BIOTECHNOLOGIE NORTH AMERICA.
XX
PI Carcagno CM, Criscuolo M, Melo C, Vidal JA;
XX
DR WPI; 2000-376574/32.
XX
PT New host cell producing recombinant human erythropoietin (EPO) used for
PT large scale production of EPO.
XX
PS Claim 1; Page 26-27; 51pp; English.
XX
CC The present sequence represents human erythropoietin protein. The
CC specification describes a host cell line which is used to produce human
CC erythropoietin (EPO). EPO is a glycoprotein. The cell line is used for
CC the production of recombinant human erythropoietin. The protein is used
CC for the treatment of anaemia, especailly anaemia derived from renal
CC failure
XX
SQ Sequence 165 AA;

Query Match 100.0%; Score 846; DB 3; Length 165;
Best Local Similarity 100.0%; Pred. No. 1.9e-86;
Matches 165; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```
Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
```

RESULT 2
AAB03760
ID AAB03760 standard; protein; 165 AA.
XX
AC AAB03760;
XX
DT 04-OCT-2000 (first entry)
XX
DE Human erythropoietin (EPO) amino acid sequence.
XX
KW Erythropoietin; EPO; human; erythroblast differentiation; anaemia;
KW large scale production; renal failure.
XX
OS Homo sapiens.
XX
PN WO200027997-A1.
XX
PD 18-MAY-2000.
XX
PF 08-NOV-1999; 99WO-US026240.
XX
PR 06-NOV-1998; 98AR-00105611.
PR 23-FEB-1999; 99AR-00100681.
XX
PA (STER-) STERRENBELD BIOTECHNOLOGIE NORTH AMERICA.
XX
PI Carcagno CM, Criscuolo M, Melo C, Vidal JA;
XX
DR WPI; 2000-376519/32.
XX
PT A novel method for the massive culture of recombinant mammalian cells
PT producing recombinant human erythropoietin.
XX
PS Example 8; Page 11-12; 23pp; English.
XX
CC This sequence represents the human erythropoietin amino acid sequence.
CC Erythropoietin is a glycoprotein that stimulates erythroblast
CC differentiation in the bone marrow. The present invention relates to a
CC method for the large scale production of human EPO from recombinant
CC mammalian cells. The method comprises culturing mammalian cells which
CC express recombinant human EPO in culture medium comprising insulin.
CC Erythropoietin can be used to treat anaemia derived from renal failure.
CC The method allows for the industrial scale production of EPO, and
CC overcomes the problems of low reproducibility and output quality which
CC are encountered with previous production methods
XX
SQ Sequence 165 AA;

Query Match 100.0%; Score 846; DB 3; Length 165;
Best Local Similarity 100.0%; Pred. No. 1.9e-86;
Matches 165; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```
Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
```

```
Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              ||||||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
```

RESULT 3
AAY94605
ID AAY94605 standard; protein; 165 AA.
XX
AC AAY94605;
XX
DT 28-NOV-2000 (first entry)
XX
DE Human erythropoietin.
XX
KW Human; erythropoietin; EPO; purification; anaemia.
XX
OS Homo sapiens.
XX
FH Key Location/Qualifiers
FT Modified-site 24
FT /note= "N-Glycosylation site"
FT Modified-site 38
FT /note= "N-Glycosylation site"
FT Modified-site 83
FT /note= "N-Glycosylation site"
FT Modified-site 126
FT /note= "O-Glycosylation site"
XX
PN WO200027869-A1.
XX
PD 18-MAY-2000.
XX
PF 08-NOV-1999; 99WO-US026241.
XX
PR 06-NOV-1998; 98AR-00105610.
PR 23-FEB-1999; 99AR-00100680.
XX
PA (STER-) STERRENBELD BIOTECHNOLOGIE NORTH AMERICA.
XX
PI Carcagno CM, Criscuolo M, Melo C, Vidal JA;
XX
DR WPI; 2000-376485/32.
XX
PT Novel methods for purifying recombinant human erythropoietin from
PT mammalian cell culture reagents.
XX
PS Claim 16; Page 18; 30pp; English.
XX
CC The present invention relates to a method for purifying erythropoietin
CC (EPO) for treatment of disease, especially anaemia. The method involves
CC treating cell culture supernatants with differential precipitation,
CC hydrophobic interaction chromatography, diafiltration, anionic and
CC cationic exchange chromatography and molecular exclusion chromatography.
CC The present sequence is the protein from the culture supernatant of
CC transfected cell lines, after purification by the above process. The
CC sequence shows total homology with natural human EPO. The advantage of
CC this method is that high purity and quality EPO is produced. A further
CC advantage is that the process does not involve the use of organic
CC solvents that may harm the environment
XX
SQ Sequence 165 AA;

```
  Query Match             100.0%;  Score 846;  DB 3;  Length 165;
  Best Local Similarity   100.0%;  Pred. No. 1.9e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
```

RESULT 4
AAY99705
ID AAY99705 standard; protein; 165 AA.
XX
AC AAY99705;
XX
DT 15-SEP-2000 (first entry)
XX
DE Non-glycosylated erythroprotein analogue NGE-166delta.
XX
KW Human; non-glycosylated erythroprotein analogue; NGEA; haematocrit;
KW antianaemic; anaemia; erythropoiesis promoter; mutant; mutein.
XX
OS Homo sapiens.
OS Synthetic.
XX
PN WO200032772-A2.
XX
PD 08-JUN-2000.
XX
PF 23-NOV-1999; 99WO-US027801.
XX
PR 30-NOV-1998; 98US-0110289P.
XX
PA (ELIL) LILLY & CO ELI.
XX
PI Beals JM, Glaesner W, Micanovic R, Millican RL, Witcher DR;
XX
DR WPI; 2000-412320/35.
DR N-PSDB; AAA48373.
XX
PT Non-glycosylated erythropoietic compound useful for increasing hematocrit
PT level in mammal with insufficient hematocrit levels in conditions such as
PT anemia, comprises protein covalently bonded to polymer.
XX
PS Claim 2; Page 93-94; 94pp; English.
XX
CC The present sequence is a non-glycosylated erythroprotein analogue (NGEA)
CC designated NGE-166delta. The protein sequence is identical to the
CC sequence of wild-type human non-glycosylated erythroprotein NGE except
CC that Arg at position 166 is deleted. NGE promotes erythropoiesis and can
CC therefore be used to increase haematocrit levels in mammals with
CC conditions such as anaemia, in which levels of haematocrit are
CC insufficient. NGE analogues can also be used to treat such conditions.
CC NGEAs do not themselves cause a significant increase in haematocrit but
CC they acquire that property once they are derivatised with polyethylene
CC glycol polymers. The analogues can be produced using a linkerless
CC aldehyde modification process. They show stability and bioactivity in
CC vivo. The nucleotide sequence encoding this protein was constructed
CC synthetically by in vitro hybridisation using a set of six overlapping
CC oligonucleotides from the positive strand of human erythropoietin cDNA
CC with six complementary oligonucleotides (negative strand). The codon
CC usage was 100% optimised for E. coli codon usage. The hybridised
CC oligonucleotides were ligated with T4 DNA ligase and the ligation product
CC amplified by PCR. The nucleotide sequence was used to express the protein
CC in host cells
XX
SQ Sequence 165 AA;

```
  Query Match             100.0%;  Score 846;  DB 3;  Length 165;
  Best Local Similarity   100.0%;  Pred. No. 1.9e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
```

```
Qy          61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy         121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
               |||||||||||||||||||||||||||||||||||||||||||||
Db         121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 5
AAB84525
ID   AAB84525 standard; protein; 165 AA.
XX
AC   AAB84525;
XX
DT   05-SEP-2001  (first entry)
XX
DE   Amino acid sequence of human erythropoietin (EPO) protein.
XX
KW   Erythropoietin; EPO; erythropoietin stimulating protein; NESP;
KW   sustained release.
XX
OS   Homo sapiens.
XX
PN   WO200130320-A1.
XX
PD   03-MAY-2001.
XX
PF   23-OCT-2000; 2000WO-US029257.
XX
PR   22-OCT-1999;   99US-00426566.
PR   13-OCT-2000; 2000US-00687981.
XX
PA   (AMGE-) AMGEN INC.
XX
PI   Burke P,  Klumb L,  Murphy K,  Herberger J,  French DL;
XX
DR   WPI; 2001-417552/44.
XX
PT   Sustained release composition comprises an active biological ingredient,
PT   notably a protein or other biopolymer, particularly erythropoietin
PT   stimulating protein, in biocompatible, biodegradable polymeric
PT   microparticles.
XX
PS   Disclosure; Page 56; 61pp; English.
XX
CC   The present sequence encodes a human erythropoietin (EPO) protein. The
CC   specification describes a composition for the sustained release of
CC   biologically active EPO stimulating protein (NESP). The reduced frequency
CC   of administration of NESP, which requires preferably injection by skilled
CC   personnel, improves patient compliance. Also, sustained release reduces
CC   the nature and severity of any side effects of the drug
XX
SQ   Sequence 165 AA;

  Query Match             100.0%;  Score 846;  DB 4;  Length 165;
  Best Local Similarity   100.0%;  Pred. No. 1.9e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
               |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 6
ABB83621
ID   ABB83621 standard; protein; 165 AA.
XX
AC   ABB83621;
XX
DT   10-OCT-2002  (first entry)
XX
DE   Protein #1 relating to modified erythropoietin glycoprotein.
XX
KW   Erythropoietin glycoprotein; anaemia; chronic renal failure; AIDS;
KW   cancer.
XX
OS   Unidentified.
XX
PN   NO200003372-A.
XX
PD   03-JAN-2001.
XX
PF   28-JUN-2000; 2000NO-00003372.
XX
PR   02-JUL-1999;   99US-0142254P.
PR   23-AUG-1999;   99US-0150225P.
PR   31-AUG-1999;   99US-0151548P.
PR   17-NOV-1999;   99US-0166151P.
XX
PA   (HOFF ) HOFFMANN LA ROCHE & CO AG F.
XX
PI   Bailon PS;
XX
DR   WPI; 2001-135308/14.
XX
PT   New conjugate having modified erythropoietin glycoprotein useful for
PT   stimulating red blood cell production and for treating diseases
PT   correlated with anemia in chronic renal failure, AIDS or cancer patients.
XX
PS   Disclosure; Page 21-22; 30pp; Norwegian.
XX
CC   This invention relates to new conjugate having a modified erythropoietin
CC   glycoprotein, useful for stimulating red blood cell production, and for
CC   treating or preventing diseases correlated with anaemia in chronic renal
CC   failure, AIDS or cancer patients. The present sequence is a protein
CC   related to the invention
XX
SQ   Sequence 165 AA;

  Query Match             100.0%;  Score 846;  DB 4;  Length 165;
  Best Local Similarity   100.0%;  Pred. No. 1.9e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
               |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 7
AAB66697
ID   AAB66697 standard; protein; 165 AA.
XX
AC   AAB66697;
XX
DT   06-APR-2001  (first entry)
XX
DE   Human erythropoietin protein #1.
XX
```

KW Erythropoietin; EPO; reticulocytes; red blood cell; ethylene glycol;
KW chronic renal failure; AIDS; cancer.
XX
OS Homo sapiens.
XX
PN WO200102017-A2.
XX
PD 11-JAN-2001.
XX
PF 28-JUN-2000; 2000WO-EP006009.
XX
PR 02-JUL-1999; 99US-0142243P.
PR 05-AUG-1999; 99US-0147452P.
PR 30-AUG-1999; 99US-0151454P.
XX
PA (HOFF) HOFFMANN LA ROCHE & CO AG F.
XX
PI Burg J, Hilger B, Josel H;
XX
DR WPI; 2001-147051/15.
XX
PT Novel erythropoietin-glycoprotein conjugate useful for treating diseases
PT correlated with anemia in chronic renal failure patients, AIDS and for
PT treating cancer, is linked to polyethylene glycol through linker.
XX
PS Claim 19; Fig 1; 40pp; English.
XX
CC The present invention relates to a conjugate comprising, human
CC erythropoietin glycoprotein (EPO) having at least one free amino group
CC and having in vivo biological activity of causing an increase the
CC production of reticulocytes and red blood cells, covalently linked to 1-3
CC lower-alkoxy poly(ethylene glycol) groups through a linker. The invention
CC is useful for preparation of medicaments for the treatment of prophylaxis
CC of disease correlated with anemia in chronic renal failure patients
CC (CRF), AIDS and for the treatment of cancer patients undergoing
CC chemotherapy
XX
SQ Sequence 165 AA;

Query Match 100.0%; Score 846; DB 4; Length 165;
Best Local Similarity 100.0%; Pred. No. 1.9e-86;
Matches 165; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
Db 1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy 61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
Db 61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy 121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
Db 121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165

RESULT 8
AAM53061
ID AAM53061 standard; protein; 165 AA.
XX
AC AAM53061;
XX
DT 25-MAR-2002 (first entry)
XX
DE Human erythropoietin (hEPO), 165 residue form.
XX
KW Human; erythropoietin; EPO; hEPO; haemostatic; red blood cell;
KW blood disorder; anaemia; chronic renal failure; CRF; AIDS;
KW acquired immunodeficiency syndrome; cancer chemotherapy; haemostatic;
KW anti-HIV; antianaemic.
XX
OS Homo sapiens.
XX
FH Key Location/Qualifiers
FT Disulfide-bond 7. .161
FT Modified-site 24
FT /note= "N-glycosylated"
FT Disulfide-bond 29. .33
FT Modified-site 38
FT /note= "N-glycosylated"
FT Modified-site 83
FT /note= "N-glycosylated"
FT Modified-site 126
FT /note= "O-glycosylated"
XX
PN WO200187329-A1.
XX
PD 22-NOV-2001.
XX
PF 08-MAY-2001; 2001WO-EP005187.
XX
PR 15-MAY-2000; 2000EP-00110355.
XX
PA (HOFF) HOFFMANN LA ROCHE & CO AG F.
XX
PI Papadimitriou A;
XX
DR WPI; 2002-082943/11.
XX
PT Composition useful in the treatment of e.g. AIDS comprises an
PT erythropoietin protein, and a multiple charged inorganic anion in a
PT buffer.
XX
PS Claim 28; Fig 1; 64pp; English.
XX
CC The invention relates to liquid pharmaceutical compositions comprising an
CC erythropoietin (EPO) protein, a multiple negatively charged inorganic
CC anion in a buffer which maintains the pH of the solution from 5.5-7.0,
CC and optionally at least one excipient. The erythropoietin used in the
CC composition is preferably human (AAM53061 or AAM53062) a human
CC erythropoietin variant containing additional glycosylation sites
CC (AAM53064-AAM53107), or an erythropoietin with the C-terminal addition of
CC a C-terminal fragment of human chorionic gonadotropin (AAM53063).
CC Erythropoietin is a glycoprotein essential for the formation of red blood
CC cells and is therefore useful in the treatment of blood disorders
CC characterised by low or defective red blood cell production. The
CC compositions of the invention can be used in the treatment and prevention
CC of anaemia in chronic renal failure patients (CRF), AIDS (acquired
CC immunodeficiency syndrome), and/or for the treatment of cancer patients
CC undergoing chemotherapy. Unlike prior art erythropoietin compositions,
CC the compositions of the invention do not contain human serum albumin
CC (thereby avoiding the possibility of viral infections and allergic
CC reactions associated with this component), are liquid rather than
CC lyophilisates (and therefore do not need to be reconstituted before
CC administration), and are stable at elevated temperatures such as 25
CC degrees Celsius and even 40 degrees Celsius, and therefore can be stored
CC without refrigeration for prolonged periods without degradation and loss
CC of activity. The present sequence represents the 165 residue form of
CC human erythropoietin which is specifically claimed for use in a
CC composition of the invention
XX
SQ Sequence 165 AA;

Query Match 100.0%; Score 846; DB 5; Length 165;
Best Local Similarity 100.0%; Pred. No. 1.9e-86;
Matches 165; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
Db 1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy 61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
Db 61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy 121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165

```
                ||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 9
ABB77896
ID   ABB77896 standard; protein; 165 AA.
XX
AC   ABB77896;
XX
DT   07-OCT-2002  (first entry)
XX
DE   Amino acid sequence of a human erythropoietin (EPO).
XX
KW   Human; erythropoietin; EPO; glycoprotein; reticulocyte production;
KW   red blood cell production; anaemia; chronic renal failure;
KW   acquired immunodeficiency syndrome; AIDS; cancer; bone marrow;
KW   committed erythroid progenitor.
XX
OS   Homo sapiens.
XX
PN   WO200249673-A2.
XX
PD   27-JUN-2002.
XX
PF   08-DEC-2001; 2001WO-EP014434.
XX
PR   20-DEC-2000; 2000EP-00127891.
XX
PA   (HOFF ) HOFFMANN LA ROCHE & CO AG F.
XX
PI   Burg J,  Engel A,  Franze R,  Hilger B,  Schurig HE,  Tischer W;
PI   Wozny M;
XX
DR   WPI; 2002-566640/60.
XX
PT   Novel conjugate of erythropoietin glycoprotein with polyethylene glycol,
PT   useful for treating diseases correlated with anemia in chronic renal
PT   failure patients and acquired immunodeficiency syndrome.
XX
PS   Claim 26; Fig 1; 40pp; English.
XX
CC   The present sequence represents a human erythropoietin (EPO) protein. It
CC   was used to produce conjugates of the invention. The specification
CC   describes a conjugate comprising an EPO glycoprotein having an N-terminal
CC   alpha-amino group, chosen from human EPO (hEPO) or its analogues (where
CC   hEPO is modified by addition of 1-6 glycosylation sites or a
CC   rearrangement of a glycosylation site). The glycoprotein is covalently
CC   linked to a poly(ethylene glycol) group. The EPO glycoprotein has in vivo
CC   biological activity of causing bone marrow cells to increase production
CC   of reticulocytes and red blood cells. The conjugate increased circulating
CC   half-life and plasma residence time, decreased clearance, increased
CC   clinical activity in vivo, improved potency and stability, when compared
CC   to unmodified EPO. The EPO conjugate is useful for preparing medicaments
CC   for the treatment and prophylaxis of diseases correlated with anaemia in
CC   chronic renal failure patients (CRF), acquired immunodeficiency syndrome
CC   (AIDS) and for treating cancer patients undergoing chemotherapy. It is
CC   also useful for treating patients by stimulating the division and
CC   differentiation of committed erythroid progenitors in the bone marrow
XX
SQ   Sequence 165 AA;

  Query Match             100.0%;  Score 846;  DB 5;  Length 165;
  Best Local Similarity   100.0%;  Pred. No. 1.9e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 10
ABP98492
ID   ABP98492 standard; protein; 165 AA.
XX
AC   ABP98492;
XX
DT   29-JUL-2003  (first entry)
XX
DE   Amino acid sequence of human erythropoietin (EPO).
XX
KW   Human; erythropoietin; EPO; novel erythropoiesis stimulating protein;
KW   NESP; haemocrit level.
XX
OS   Homo sapiens.
XX
PN   WO2003020299-A1.
XX
PD   13-MAR-2003.
XX
PF   29-AUG-2002; 2002WO-US027855.
XX
PR   30-AUG-2001; 2001US-00945517.
XX
PA   (KIRI ) KIRIN AMGEN INC.
XX
PI   Li T,  Chang BS,  Sloey C;
XX
DR   WPI; 2003-402847/38.
XX
PT   Pharmaceutical formulation for single use comprises biologically active
PT   agent, methionine and optional preservative and does not contain human
PT   serum albumin.
XX
PS   Claim 6; Page 37; 40pp; English.
XX
CC   The present sequence represents human erythropoietin (EPO). EPO is used
CC   as the active agent in formulations of the invention. The specification
CC   describes a pharmaceutical formulation, which comprises a biologically
CC   active agent (e.g. EPO or novel erythropoiesis stimulating protein
CC   (NESP)), methionine and a preservative. The formulation does not contain
CC   human serum albumin (HSA). The formulation has improved stability.
CC   Incorporation of methionine and other stabilizing agents into the
CC   formulation produces a more stable formulation, even in extreme
CC   conditions, where the critical degradations induced by light, heat,
CC   impurities in additives, leacheates in the prefilled syringes, the
CC   manufacturing process, storage, transportation and handling are
CC   prevented. The formulation is useful as a single use and a multi-dose
CC   formulation. Where NESP is the active agent, it may be used to raise
CC   haemocrit levels
XX
SQ   Sequence 165 AA;

  Query Match             100.0%;  Score 846;  DB 6;  Length 165;
  Best Local Similarity   100.0%;  Pred. No. 1.9e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
```

```
RESULT 11
ABR39995
ID   ABR39995 standard; protein; 165 AA.
XX
AC   ABR39995;
XX
DT   02-SEP-2003  (first entry)
XX
DE   Human erythropoietin (EPO) sequence.
XX
KW   EPO; erythropoietin; mutein; reticulocyte; red blood cell; antianemic;
KW   AIDS; cancer.
XX
OS   Homo sapiens.
XX
FH   Key             Location/Qualifiers
FT   Disulfide-bond  7. .161
FT                   /note= "disulphide bridge"
FT   Disulfide-bond  29. .33
FT                   /note= "disulphide bridge"
FT   Modified-site   38
FT                   /note= "Asn is N-glycosylated"
FT   Modified-site   83
FT                   /note= "Asn is N-glycosylated"
FT   Modified-site   126
FT                   /note= "Ser is O-glycosylated"
XX
PN   WO2003029291-A2.
XX
PD   10-APR-2003.
XX
PF   20-SEP-2002; 2002WO-EP010556.
XX
PR   25-SEP-2001; 2001EP-00122555.
XX
PA   (HOFF ) HOFFMANN LA ROCHE & CO AG F.
XX
PI   Tischer W;
XX
DR   WPI; 2003-457226/43.
XX
PT   Novel erythropoietin mutein having in vivo biological activity of causing
PT   bone marrow cells to increase production of reticulocytes/red blood
PT   cells, is N-glycosylated at Asn38 and Asn83 but not N-glycosylated at
PT   Asn24.
XX
PS   Claim 6; Page 21-22; 22pp; English.
XX
CC   The invention relates to an erythropoietin mutein (I) having the in vivo
CC   biological activity of causing bone marrow cells to increase production
CC   of reticulocytes and red blood cells, characterized by being N-
CC   glycosylated at Asn38 and Asn83 but not N-glycosylated at Asn24. (I) or
CC   an aqueous composition comprising an erythropoietin mutein is useful for
CC   the preparation of a medicament for the treatment or prophylaxis of
CC   diseases correlated with anemia in chronic renal failure patients (CRF),
CC   AIDS and for the treatment of cancer patients undergoing chemotherapy.
CC   (I) or the composition is useful for treating a human patient
CC   experiencing blood disorders characterized by low or defective red blood
CC   cell production. (I) is useful for enhancing red blood cell formation.
CC   The present sequence represents a human erythropoietin (EPO) sequence
XX
SQ   Sequence 165 AA;

  Query Match             100.0%;  Score 846;  DB 6;  Length 165;
  Best Local Similarity   100.0%;  Pred. No. 1.9e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 12
ADL06780
ID   ADL06780 standard; protein; 165 AA.
XX
AC   ADL06780;
XX
DT   03-JUN-2004  (first entry)
XX
DE   Human 165 residue erythropoietin (EPO), SEQ ID NO:1.
XX
KW   Human; erythropoietin; EPO; iron distribution disturbance; diabetes;
KW   non-insulin dependent diabetes; type 2 diabetes; reticulocyte production;
KW   red blood cell production; antidiabetic.
XX
OS   Homo sapiens.
XX
PN   WO2004019972-A1.
XX
PD   11-MAR-2004.
XX
PF   20-AUG-2003; 2003WO-EP009194.
XX
PR   29-AUG-2002; 2002EP-00019100.
XX
PA   (HOFF ) HOFFMANN LA ROCHE & CO AG F.
XX
PI   Lehmann P,  Roeddiger R,  Walter-Matsui R;
XX
DR   WPI; 2004-282643/26.
XX
PT   Use of erythropoietin protein in manufacture of medicament for treating
PT   disturbances of iron distribution in diabetes.
XX
PS   Claim 6; SEQ ID NO 1; 31pp; English.
XX
CC   The invention relates to the use of an erythropoietin (EPO) protein for
CC   the treatment of disturbances of iron distribution in diabetes. The
CC   erythropoietin protein is preferably a human erythropoietin (e.g.,
CC   epoetin alpha and epoetin beta) which may be expressed by endogenous gene
CC   activation or an erythropoeitin analogue such as darbepoietin alpha. The
CC   erythropietin protein used in the method may also be modified by the
CC   addition of 1-6 glycosylation sites, or by pegylation. Patients with
CC   diabetes have been found to have a high probablility of be affected by
CC   disturbances of iron distribution. In such patients, the overall
CC   concentration of iron in the body is normal (compared with consitions
CC   such as anaemia), but the individual may suffer the effects of iron
CC   accumulation in certain organs, leading to organ damage and destruction,
CC   and/or experience effects similar to anaemia due to iron usage in blood
CC   cell formation being impaired. Erythropoietin causes bone marrow cells to
CC   increase production of reticulocytes and red blood cells, and this has
CC   been found to have a beneficial effect on iron distibution disturbances
CC   in diabetes e.g., non-insulin dependent (type 2) diabetes. Erythropietin
CC   proteins may therefore be used to manufacture a medicament for the
CC   treatment of disturbances of iron distribution in diabetes. The present
CC   sequence represents a 165 amino acid human erythropoietin which is
CC   specifically claimed for use in the invention.
XX
SQ   Sequence 165 AA;

  Query Match             100.0%;  Score 846;  DB 8;  Length 165;
  Best Local Similarity   100.0%;  Pred. No. 1.9e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
```

```
                 ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
                 ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
                 |||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 13
ADN49745
ID   ADN49745 standard; protein; 165 AA.
XX
AC   ADN49745;
XX
DT   15-JUL-2004  (first entry)
XX
DE   Mature human erythropoietin protein SeqID 73.
XX
KW   human; erythropoietin; EPO; glycoconjugation; glycoPEGylated EPO peptide;
KW   anaemia; antianaemic; haematocrit level; kidney dialysis; haematology;
KW   erythropoietin.
XX
OS   Homo sapiens.
XX
PN   WO2004033651-A2.
XX
PD   22-APR-2004.
XX
PF   08-OCT-2003; 2003WO-US031974.
XX
PR   09-OCT-2002; 2002WO-US032263.
PR   05-NOV-2002; 2002US-00287994.
PR   06-JAN-2003; 2003US-00360770.
PR   19-FEB-2003; 2003US-00360779.
PR   09-APR-2003; 2003US-00410945.
XX
PA   (NEOS-) NEOSE TECHNOLOGIES INC.
XX
PI   De Frees S,  Zopf D,  Bayer R,  Bowe C,  Hakes D,  Chen X;
XX
DR   WPI; 2004-399848/37.
XX
PT   Novel erythropoietin peptide comprising one or more glycans, having
PT   glycoconjugate molecule covalently attached to peptide, useful for
PT   treating anemia in mammal such as human.
XX
PS   Claim 38; SEQ ID NO 73; 1018pp; English.
XX
CC   This invention relates to novel erythropoietin (EPO) peptides and the
CC   remodelling and glycoconjugation of these naturally occurring peptides
CC   thereof. Specifically, each EPO peptide comprises one or more glycans and
CC   has a glycoconjugate molecule such as polyethylene glycol (PEG) attached
CC   to it. Accordingly, the present invention provides glycoPEGylated EPO
CC   peptides that have either monoantennary, biantennary or triantennary
CC   glycans covalently attached thereto. As such, these peptides are useful
CC   for the treatment of anaemia, and hence exhibit antianaemic activities
CC   working to increase haematocrit levels in mammals, in particular in
CC   humans i.e. increasing the relative volume of blood occupied by
CC   erythrocytes. Furthermore, EPO therapy can be used to treat kidney
CC   dialysis patients. This polypeptide is a human protein sequence related
CC   to the field of haematology, given in an exemplification of the
CC   invention.
XX
SQ   Sequence 165 AA;

  Query Match             100.0%;  Score 846;  DB 8;  Length 165;
  Best Local Similarity   100.0%;  Pred. No. 1.9e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;
```

```
Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
                 ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
                 ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
                 |||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 14
ADO59415
ID   ADO59415 standard; protein; 165 AA.
XX
AC   ADO59415;
XX
DT   26-AUG-2004  (first entry)
XX
DE   Human 165 residue erythropoietin (EPO), SEQ ID NO:1.
XX
KW   Human; erythropoietin; EPO; iron distribution disturbance; heart disease;
KW   heart insufficiency; coronary heart disease; atherosclerosis;
KW   acute coronary syndrome; heart failure; congestive heart failure;
KW   reticulocyte production; red blood cell production; cardiant;
KW   antiarteriosclerotic.
XX
OS   Homo sapiens.
XX
PN   WO2004047858-A1.
XX
PD   10-JUN-2004.
XX
PF   17-NOV-2003; 2003WO-EP012822.
XX
PR   22-NOV-2002; 2002EP-00026342.
XX
PA   (HOFF ) HOFFMANN LA ROCHE & CO AG F.
XX
PI   Lehmann P,  Roeddiger R,  Walter-Matsui R;
XX
DR   WPI; 2004-450212/42.
XX
PT   Use of erythropoietin protein in the manufacture of medicament for
PT   treating disturbances of iron distribution in heart diseases e.g. heart
PT   insufficiency.
XX
PS   Claim 6; SEQ ID NO 1; 31pp; English.
XX
CC   The invention relates to the use of an erythropoietin (EPO) protein for
CC   the treatment of disturbances of iron distribution in heart diseases. The
CC   erythropoietin protein is preferably a human erythropoietin (e.g.,
CC   epoetin alpha and epoetin beta) which may be expressed by endogenous gene
CC   activation or an erythropoeitin analogue such as darbepoietin alpha. The
CC   erythropoietin protein used in the method may also be modified by the
CC   addition of 1-6 glycosylation sites, or by pegylation. Patients with
CC   heart diseases have been found to have a high probability of be affected
CC   by disturbances of iron distribution. In such patients, the overall
CC   concentration of iron in the body is normal (compared with conditions
CC   such as anaemia), but the individual may suffer the effects of iron
CC   accumulation in certain organs, leading to organ damage and destruction,
CC   and/or experience effects similar to anaemia due to iron usage in blood
CC   cell formation being impaired. Erythropoietin causes bone marrow cells to
CC   increase production of reticulocytes and red blood cells, and this has
CC   been found to have a beneficial effect on iron distribution disturbances
CC   in heart diseases e.g., heart insufficiency, coronary heart disease,
CC   atherosclerosis, acute coronary syndrome, heart failure and congestive
CC   heart failure. Erythropoietin proteins may therefore be used to
CC   manufacture a medicament for the treatment of disturbances of iron
CC   distribution in heart diseases. The present sequence represents a 165
CC   amino acid human erythropoietin which is specifically claimed for use in
```

```
CC   the invention.
XX
SQ   Sequence 165 AA;

  Query Match             100.0%;  Score 846;  DB 8;  Length 165;
  Best Local Similarity   100.0%;  Pred. No. 1.9e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 15
AAP70398
ID   AAP70398 standard; protein; 166 AA.
XX
AC   AAP70398;
XX
DT   19-FEB-1991  (first entry)
XX
DE   Sequence of human erythropoietin (EPO).
XX
KW   Mega-karyocyte-platelet growth factor; hormone;
KW   mega-karyocyte colony stimulating factor; therapy;
KW   small acetyl cholinesterase positive cell; erythrocyte growth effect.
XX
OS   Homo sapiens.
XX
PN   JP62149624-A.
XX
PD   03-JUL-1987.
XX
PF   15-AUG-1986;   86JP-00191542.
XX
PR   13-SEP-1985;   85JP-00203049.
XX
PA   (KAWA/) KAWAKITA M.
XX
DR   WPI; 1987-224837/32.
XX
PT   Megakaryocyte-platelet growth factor - contains as active component human
PT   erythropoietin and is used to treat diseases caused by decrease in
PT   platelets.
XX
PS   Disclosure; Page 181; 8pp; Japanese.
XX
CC   All of the Cys residues in the SQ are labelled "SH". Megakaryocyte-
CC   platelet growth factor contains human EPO as an active principle. Human
CC   EPO has a megakaryocyte colony-stimulating activity and increases the
CC   ratio of small acetyl cholinesterase posiitive cell (SAchE+) which is
CC   immature megakaryocyte. Human EPO effects megakaryocyte-platelet system
CC   other than an erythrocyte growth effect. Megakaryocyte-platelet growth is
CC   usable as a remedy for diseases caused by a platelet decrease
XX
SQ   Sequence 166 AA;

  Query Match             100.0%;  Score 846;  DB 1;  Length 166;
  Best Local Similarity   100.0%;  Pred. No. 1.9e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 16
AAR23593
ID   AAR23593 standard; protein; 166 AA.
XX
AC   AAR23593;
XX
DT   20-OCT-1992  (first entry)
XX
DE   Recombinant hematopoietic molecule portion 2.
XX
KW   Erythropoietin; EPO: erythrocytes; IL-3; haematopoiesis.
XX
OS   Homo sapiens.
XX
PN   WO9206116-A.
XX
PD   16-APR-1992.
XX
PF   26-SEP-1991;   91WO-US007053.
XX
PR   28-SEP-1990;   90US-00589958.
XX
PA   (ORTH ) ORTHO PHARM CORP.
XX
PI   Rosen JI;
XX
DR   WPI; 1992-150819/18.
XX
PT   Recombinant haematopoietic molecules useful in treating anaemia(s) -
PT   comprise IL3 or GM-CSF and EPO, G-CSF, IL-5 or M-CSF and has early and
PT   later myeloid differentiation activity.
XX
PS   Disclosure; Page 32; 82pp; English.
XX
CC   This protein sequence given comprises the entire amino acid sequence of
CC   human erythropoietin (EPO). EPO leads to the maturation of erythrocytes
CC   and is therefore designated as a late myeloid differentiation factor
CC   (MDF). Within the scope of the invention hybrid molecules were produced
CC   which contain at least a portion of an early MDF and at least a portion
CC   of a late MDF covalently linked. The EPO sequence given is effective
CC   within the scope of the invention in full or in a truncated version.
CC   Amino acids 7-161 act as a late MDF when recombined with an early MDF eg.
CC   IL-3. These compounds can be used to promote heamatopoiesis in a patient.
CC   The bonding of the early and late factors allows a very high conc. of
CC   late MDF at the surface of a cell which the early MDF is bound. It also
CC   allows the early MDA to act more specifically to stimulate only the
CC   desired lineage, thus reducing undesirable effects. These compounds are
CC   useful for treating anaemias of various origins eg.renal failure and
CC   AIDS. It is easier to produce and administer one recombinant molecule
CC   rather than two separate molecules
XX
SQ   Sequence 166 AA;

  Query Match             100.0%;  Score 846;  DB 2;  Length 166;
  Best Local Similarity   100.0%;  Pred. No. 1.9e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
```

```
Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              ||||||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 17
AAW58404
ID   AAW58404 standard; protein; 166 AA.
XX
AC   AAW58404;
XX
DT   12-OCT-1998  (first entry)
XX
DE   Human erythropoietin.
XX
KW   Erythropoietin receptor agonist; EPO; human; anaemia;
KW   haematopoietic deficiency; red blood cell; erythroid progenitor;
KW   bone marrow suppression.
XX
OS   Homo sapiens.
XX
PN   WO9818926-A1.
XX
PD   07-MAY-1998.
XX
PF   23-OCT-1997;   97WO-US018703.
XX
PR   25-OCT-1996;   96US-0034044P.
XX
PA   (SEAR ) SEARLE & CO G D.
XX
PI   Mcwherter CA,  Feng Y,  Summers N;
XX
DR   WPI; 1998-272221/24.
DR   N-PSDB; AAV31031.
XX
PT   Human erythropoietin receptor agonist polypeptide - used to stimulate the
PT   production of red blood cells in a patient.
XX
PS   Claim 1; Page 93; 112pp; English.
XX
CC   A claimed human erythropoietin (EPO) receptor agonist polypeptide
CC   comprises a modified EPO amino acid sequence given in AAW58404, where (a)
CC   optionally 1-6 amino acids from the N-terminus and 1-5 from the C-
CC   terminus can be deleted, (b) the N-terminus is joined to the C-terminus
CC   directly or through a linker (see AAW58405-12) capable of joining the N-
CC   terminus to the C-terminus, (c) there are new C- and N-termini at any two
CC   consecutive amino acids from amino acids 23-24 to 38-39, 40-41 to 41-42,
CC   43-44 to 48-49, 50-51 to 57-58, 77-78 to 82-83, 84-85 to 88-89, and 108-
CC   109 to 131-132, and (d) optionally the agonist polypeptide is preceded by
CC   Met, Ala, or Met-Ala. 60 Of these circularly permuted EPO receptor
CC   agonists (see AAW58413-72) are claimed. Also claimed are: nucleic acid
CC   molecules (see AAV30971-V31030) encoding novel EPO receptor agonists; a
CC   method of producing an EPO receptor agonist using transformed or
CC   transfected host cells; and methods for stimulating the production of
CC   haematopoietic cells, for selective ex vivo expansion of erythroid
CC   progenitors, and treating patients having a haematopoietic disorder using
CC   the EPO receptor agonists. The EPO receptor agonists retain one or more
CC   activities of native EPO and may also show improved haematopoietic cell-
CC   stimulating activity and/or an improved activity profile which may
CC   include reduction of undesirable biological activities associated with
CC   native EPO and/or have improved physical properties such as increased
CC   solubility, stability and refold efficiency
XX
SQ   Sequence 166 AA;

  Query Match             100.0%;  Score 846;  DB 2;  Length 166;
  Best Local Similarity   100.0%;  Pred. No. 1.9e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||

Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 18
AAW77780
ID   AAW77780 standard; protein; 166 AA.
XX
AC   AAW77780;
XX
DT   24-NOV-1998  (first entry)
XX
DE   Human EPO receptor agonist polypeptide.
XX
KW   Haematopoietic receptor agonist; erythropoietin receptor agonist; EPO;
KW   human; chimeric protein; stem cell expansion; tumour; infection;
KW   autoimmune disease; haematopoietic disorder; therapy; dendritic cell.
XX
OS   Homo sapiens.
XX
FH   Key             Location/Qualifiers
FT   Misc-difference 1. .6
FT                   /note= "1-6 amino acids of the N-terminus are optionally
FT                   deleted"
FT   Misc-difference 23. .24
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 24. .25
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 25. .26
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 26. .27
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 27. .28
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 28. .29
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 29. .30
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 30. .31
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 31. .32
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 32. .33
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 33. .34
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 34. .35
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 35. .36
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 36. .37
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 37. .38
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 38. .39
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 39. .40
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 40. .41
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 41. .42
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 42. .43
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 43. .44
FT                   /note= "possible positions of new C- and N-termini"
```

```
FT   Misc-difference 44. .45
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 45. .46
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 46. .47
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 47. .48
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 48. .49
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 49. .50
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 50. .51
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 51. .52
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 52. .53
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 53. .54
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 54. .55
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 55. .56
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 56. .57
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 57. .58
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 77. .78
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 78. .79
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 79. .80
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 81. .82
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 82. .83
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 84. .85
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 85. .86
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 86. .87
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 87. .88
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 88. .89
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 108. .109
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 109. .110
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 110. .111
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 111. .112
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 112. .113
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 113. .114
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 114. .115
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 115. .116
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 116. .117
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 117. .118
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 118. .119
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 119. .120
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 120. .121
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 121. .122
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 122. .123
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 123. .124
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 124. .125
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 125. .126
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 126. .127
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 127. .128
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 128. .129
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 129. .130
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 130. .131
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 131. .132
FT                   /note= "possible positions of new C- and N-termini"
FT   Misc-difference 162. .166
FT                   /note= "1-5 amino acids of the C-terminus are optionally
FT                   deleted"
XX
PN   WO9817810-A2.
XX
PD   30-APR-1998.
XX
PF   23-OCT-1997;   97WO-US020037.
XX
PR   25-OCT-1996;   96US-0029629P.
XX
PA   (SEAR ) SEARLE & CO G D.
XX
PI   Mcwherter CA,  Feng Y,  Mckearn JP,  Summers NL,  Staten NR;
PI   Streeter PR,  Minnerly JC,  Minster NI,  Woulfe SL;
XX
DR   WPI; 1998-261504/23.
XX
PT   Multi-functional chimeric haematopoietic receptor agonist - useful to
PT   treat haematopoietic disorders, tumours, infections or autoimmune
PT   diseases.
XX
PS   Claim 1; Page 762; 841pp; English.
XX
CC   A human erythropoietin (EPO) receptor agonist polypeptide comprises a
CC   modified EPO amino acid sequence of the formula provided in AAW77780, in
CC   which the N-terminus is joined to the C-terminus directly or via a
CC   linker, the polypeptide having new C- and N-termini at one of the
CC   positions indicated. Novel claimed multi-functional chimeric
CC   haematopoietic receptor agonists (see AAW77812-22) have the formula R1-L1
CC   -R2, R2-L1-R1, R1-R2 or R2-R1, where L is a linker and R1 and R2 are
CC   independently selected from: (a) the human EPO receptor agonist; (b) a
CC   human stem cell factor receptor agonist polypeptide (see AAW77781); (c) a
CC   human flt-3 receptor agonist polypeptide (see AAW77782); (d) a modified
CC   human granulocyte colony stimulating factor (G-CSF) polypeptide (see
CC   AAW77783); (e) modified human interleukin-3 polypeptide (see AAW77784);
CC   (f) modified human c-mpl ligand polypeptide (see AAW77785); and (g) a
CC   factor selected from the group consisting of a CSF, a cytokine, a
CC   lymphokine, an interleukin and a haematopoietic growth factor, provided
CC   that at least R1 or R2 is selected from (a), (b) or (c) as above. The
CC   multi-functional chimeric haematopoietic receptor agonist can be used to
CC   stimulate the production of haematopoietic cells in a patient, for the ex
CC   vivo expansion of haematopoietic cells, for the production of dendritic

  Query Match             100.0%;  Score 846;  DB 2;  Length 166;
  Best Local Similarity   100.0%;  Pred. No. 1.9e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
```

```
                ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db            1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy           61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
                ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db           61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy          121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
                ||||||||||||||||||||||||||||||||||||||||||||
Db          121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 19
ABB07030
ID   ABB07030 standard; protein; 166 AA.
XX
AC   ABB07030;
XX
DT   21-JUN-2002  (first entry)
XX
DE   Modified erythropoietin related gene protein sequence.
XX
KW   Modified erythropoietin; EPO.
XX
OS   Unidentified.
XX
PN   KR145802-B1.
XX
PD   01-AUG-1998.
XX
PF   31-MAY-1994;   94KR-00012082.
XX
PR   31-MAY-1994;   94KR-C0012082.
XX
PA   (GLDS ) LG CHEM CO LTD.
XX
PI   Kim C,  Song Y,  Lee T;
XX
DR   WPI; 2000-234250/20.
DR   N-PSDB; ABL50878.
XX
PT   MODIFIED ERYTHROPOIETIN GENE AND EXPRESSION VECTORS THEREOF.
XX
PS   Disclosure; Page 14; 15pp; Korean.
XX
CC   The present invention describes modified erythropoietin (EPO) genes and
CC   expression vectors comprising the genes. The present sequence represents
CC   a protein sequence from the present invention
XX
SQ   Sequence 166 AA;

  Query Match             100.0%;  Score 846;  DB 3;  Length 166;
  Best Local Similarity   100.0%;  Pred. No. 1.9e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy           1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
                ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db           1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy          61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
                ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy         121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
                ||||||||||||||||||||||||||||||||||||||||||||
Db         121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 20
ABB83622
ID   ABB83622 standard; protein; 166 AA.
XX
AC   ABB83622;
XX
DT   10-OCT-2002  (first entry)
XX
DE   Protein #2 relating to modified erythropoietin glycoprotein.
XX
KW   Erythropoietin glycoprotein; anaemia; chronic renal failure; AIDS;
KW   cancer.
XX
OS   Unidentified.
XX
PN   NO200003372-A.
XX
PD   03-JAN-2001.
XX
PF   28-JUN-2000; 2000NO-00003372.
XX
PR   02-JUL-1999;   99US-0142254P.
PR   23-AUG-1999;   99US-0150225P.
PR   31-AUG-1999;   99US-0151548P.
PR   17-NOV-1999;   99US-0166151P.
XX
PA   (HOFF ) HOFFMANN LA ROCHE & CO AG F.
XX
PI   Bailon PS;
XX
DR   WPI; 2001-135308/14.
XX
PT   New conjugate having modified erythropoietin glycoprotein useful for
PT   stimulating red blood cell production and for treating diseases
PT   correlated with anemia in chronic renal failure, AIDS or cancer patients.
XX
PS   Disclosure; Page 22-23; 30pp; Norwegian.
XX
CC   This invention relates to new conjugate having a modified erythropoietin
CC   glycoprotein, useful for stimulating red blood cell production, and for
CC   treating or preventing diseases correlated with anaemia in chronic renal
CC   failure, AIDS or cancer patients. The present sequence is a protein
CC   related to the invention
XX
SQ   Sequence 166 AA;

  Query Match             100.0%;  Score 846;  DB 4;  Length 166;
  Best Local Similarity   100.0%;  Pred. No. 1.9e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy           1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
                ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db           1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy          61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
                ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy         121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
                ||||||||||||||||||||||||||||||||||||||||||||
Db         121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 21
AAE02641
ID   AAE02641 standard; protein; 166 AA.
XX
AC   AAE02641;
XX
DT   06-AUG-2001  (first entry)
XX
DE   Human erythropoietin (EPO) mature protein.
XX
KW   Human; erythropoietin; EPO; antianaemic; nephrotrophic; anti-HIV;
KW   vaccine; haemostatic; immunoglobulin; Ig; EPO deficient disease; anaemia;
KW   renal failure; Human Immunodeficiency Virus; HIV;
KW   haematopoietic growth factor.
XX
```

OS Homo sapiens.
XX
PN WO200136489-A2.
XX
PD 25-MAY-2001.
XX
PF 03-NOV-2000; 2000WO-EP010843.
XX
PR 12-NOV-1999; 99US-0164855P.
XX
PA (MERE) MERCK PATENT GMBH.
XX
PI Hartmann A, Brandt S, Rieke E, Sobel C, Lo K, Way JC, Gillies S;
XX
DR WPI; 2001-367563/38.
DR N-PSDB; AAD06893.
XX
PT Novel modified erythropoietin forms such as fusion proteins, comprising
PT Fc portion of an immunoglobulin molecule and a target molecule having the
PT biological activity of erythropoietin forms.
XX
PS Example 1; Page 22; 58pp; English.
XX
CC The present sequence is human erythropoietin (EPO) mature protein. EPO
CC has improved biological activity and an extended serum half life greater
CC than 20 hours. The present invention relates to modified EPO forms such
CC as fusion proteins comprising a Fc portion of an immunoglobulin (Ig)
CC molecule and an EPO molecule (Fc-EPO). The Fc portion is fused covalently
CC through its C-terminus directly or indirectly to the EPO molecule, and
CC where the Fc portion as well as EPO portion may be modified or mutated.
CC The invention also relates to non-fused EPO molecules which have a
CC pattern of cysteines or disulphide bonding which is distinct from human
CC or animal EPO. Pharmaceutical compositions containing EPO are useful in
CC the treatment of EPO deficient diseases such as anaemia, renal failure,
CC HIV infection, blood loss and chronic disease that can be treated with
CC haematopoietic growth factor
XX
SQ Sequence 166 AA;

Query Match 100.0%; Score 846; DB 4; Length 166;
Best Local Similarity 100.0%; Pred. No. 1.9e-86;
Matches 165; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```
Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
```

RESULT 22
AAB66698
ID AAB66698 standard; protein; 166 AA.
XX
AC AAB66698;
XX
DT 06-APR-2001 (first entry)
XX
DE Human erythropoietin protein #2.
XX
KW Erythropoietin; EPO; reticulocytes; red blood cell; ethylene glycol;
KW chronic renal failure; AIDS; cancer.
XX
OS Homo sapiens.
XX
PN WO200102017-A2.
XX
PD 11-JAN-2001.
XX
PF 28-JUN-2000; 2000WO-EP006009.
XX
PR 02-JUL-1999; 99US-0142243P.
PR 05-AUG-1999; 99US-0147452P.
PR 30-AUG-1999; 99US-0151454P.
XX
PA (HOFF) HOFFMANN LA ROCHE & CO AG F.
XX
PI Burg J, Hilger B, Josel H;
XX
DR WPI; 2001-147051/15.
XX
PT Novel erythropoietin-glycoprotein conjugate useful for treating diseases
PT correlated with anemia in chronic renal failure patients, AIDS and for
PT treating cancer, is linked to polyethylene glycol through linker.
XX
PS Claim 19; Fig 2; 40pp; English.
XX
CC The present invention relates to a conjugate comprising, human
CC erythropoietin glycoprotein (EPO) having at least one free amino group
CC and having in vivo biological activity of causing an increase the
CC production of reticulocytes and red blood cells, covalently linked to 1-3
CC lower-alkoxy poly(ethylene glycol) groups through a linker. The invention
CC is useful for preparation of medicaments for the treatment of prophylaxis
CC of disease correlated with anemia in chronic renal failure patients
CC (CRF), AIDS and for the treatment of cancer patients undergoing
CC chemotherapy
XX
SQ Sequence 166 AA;

Query Match 100.0%; Score 846; DB 4; Length 166;
Best Local Similarity 100.0%; Pred. No. 1.9e-86;
Matches 165; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```
Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
```

RESULT 23
ABG92101
ID ABG92101 standard; protein; 166 AA.
XX
AC ABG92101;
XX
DT 29-NOV-2002 (first entry)
XX
DE Human erythropoietin (EPO).
XX
KW Human; erythropoietin; EPO; immunogenic; MHC class I; T-cell;
KW major histocompatibility complex.
XX
OS Homo sapiens.
XX
PN WO200262843-A2.
XX
PD 15-AUG-2002.
XX
PF 05-FEB-2002; 2002WO-EP001174.
XX
PR 06-FEB-2001; 2001EP-00102615.
PR 19-FEB-2001; 2001EP-00103954.
XX

PA (MERE) MERCK PATENT GMBH.
XX
PI Carr FJ, Carter G, Jones T, Williams S;
XX
DR WPI; 2002-627523/67.
XX
PT New modified molecule that is non-immunogenic and which has the
PT biological activity of human erythropoietin, useful for reducing
PT propensity of the polypeptide to elicit an immune response upon
PT administration to human subject.
XX
PS Disclosure; Page 5; 33pp; English.
XX
CC The invention relates to a modified molecule having the biological
CC activity of human erythropoietin (EPO) and being substantially non-
CC immunogenic or less immunogenic than any non-modified molecule having the
CC same biological activity when used in vivo. The modified molecule is
CC useful for reducing propensity of the polypeptide to elicit an immune
CC response upon administration to human subject. The 13mer T-cell group
CC peptides having a potential MHC class II binding activity and created
CC from immunogenically non-modified erythropoietin, are useful for the
CC manufacture of erythropoietin having substantially no or less
CC immunogenicity than any non-modified molecule with the same biological
CC activity when used in vivo. ABG92101-ABG92172 represent human
CC erythropoietin and erythropoietin T-cell group peptides of the invention
XX
SQ Sequence 166 AA;

Query Match 100.0%; Score 846; DB 5; Length 166;
Best Local Similarity 100.0%; Pred. No. 1.9e-86;
Matches 165; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
Db 1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy 61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
Db 61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy 121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
Db 121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165

RESULT 24
AAM53062
ID AAM53062 standard; protein; 166 AA.
XX
AC AAM53062;
XX
DT 25-MAR-2002 (first entry)
XX
DE Human erythropoietin (hEPO), 166 residue form.
XX
KW Human; erythropoietin; EPO; hEPO; haemostatic; red blood cell;
KW blood disorder; anaemia; chronic renal failure; CRF; AIDS;
KW acquired immunodeficiency syndrome; cancer chemotherapy; haemostatic;
KW anti-HIV; antianaemic.
XX
OS Homo sapiens.
XX
FH Key Location/Qualifiers
FT Disulfide-bond 7. .161
FT Modified-site 24
FT /note= "N-glycosylated"
FT Disulfide-bond 29. .33
FT Modified-site 38
FT /note= "N-glycosylated"
FT Modified-site 83
FT /note= "N-glycosylated"
FT Modified-site 126
FT /note= "O-glycosylated"
XX
PN WO200187329-A1.
XX
PD 22-NOV-2001.
XX
PF 08-MAY-2001; 2001WO-EP005187.
XX
PR 15-MAY-2000; 2000EP-00110355.
XX
PA (HOFF) HOFFMANN LA ROCHE & CO AG F.
XX
PI Papadimitriou A;
XX
DR WPI; 2002-082943/11.
XX
PT Composition useful in the treatment of e.g. AIDS comprises an
PT erythropoietin protein, and a multiple charged inorganic anion in a
PT buffer.
XX
PS Claim 28; Fig 2; 64pp; English.
XX
CC The invention relates to liquid pharmaceutical compositions comprising an
CC erythropoietin (EPO) protein, a multiple negatively charged inorganic
CC anion in a buffer which maintains the pH of the solution from 5.5-7.0,
CC and optionally at least one excipient. The erythropoietin used in the
CC composition is preferably human (AAM53061 or AAM53062) a human
CC erythropoietin variant containing additional glycosylation sites
CC (AAM53064-AAM53107), or an erythropoietin with the C-terminal addition of
CC a C-terminal fragment of human chorionic gonadotropin (AAM53063).
CC Erythropoietin is a glycoprotein essential for the formation of red blood
CC cells and is therefore useful in the treatment of blood disorders
CC characterised by low or defective red blood cell production. The
CC compositions of the invention can be used in the treatment and prevention
CC of anaemia in chronic renal failure patients (CRF), AIDS (acquired
CC immunodeficiency syndrome), and/or for the treatment of cancer patients
CC undergoing chemotherapy. Unlike prior art erythropoietin compositions,
CC the compositions of the invention do not contain human serum albumin
CC (thereby avoiding the possibility of viral infections and allergic
CC reactions associated with this component), are liquid rather than
CC lyophilisates (and therefore do not need to be reconstituted before
CC administration), and are stable at elevated temperatures such as 25
CC degrees Celsius and even 40 degrees Celsius, and therefore can be stored
CC without refrigeration for prolonged periods without degradation and loss
CC of activity. The present sequence represents the 166 residue form of
CC human erythropoietin which is specifically claimed for use in a
CC composition of the invention
XX
SQ Sequence 166 AA;

Query Match 100.0%; Score 846; DB 5; Length 166;
Best Local Similarity 100.0%; Pred. No. 1.9e-86;
Matches 165; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
Db 1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy 61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
Db 61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy 121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
Db 121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165

RESULT 25
ABB77897
ID ABB77897 standard; protein; 166 AA.
XX
AC ABB77897;
XX
DT 07-OCT-2002 (first entry)

XX
DE Amino acid sequence of a human erythropoietin (EPO).
XX
KW Human; erythropoietin; EPO; glycoprotein; reticulocyte production;
KW red blood cell production; anaemia; chronic renal failure;
KW acquired immunodeficiency syndrome; AIDS; cancer; bone marrow;
KW committed erythroid progenitor.
XX
OS Homo sapiens.
XX
PN WO200249673-A2.
XX
PD 27-JUN-2002.
XX
PF 08-DEC-2001; 2001WO-EP014434.
XX
PR 20-DEC-2000; 2000EP-00127891.
XX
PA (HOFF) HOFFMANN LA ROCHE & CO AG F.
XX
PI Burg J, Engel A, Franze R, Hilger B, Schurig HE, Tischer W;
PI Wozny M;
XX
DR WPI; 2002-566640/60.
XX
PT Novel conjugate of erythropoietin glycoprotein with polyethylene glycol,
PT useful for treating diseases correlated with anemia in chronic renal
PT failure patients and acquired immunodeficiency syndrome.
XX
PS Claim 26; Fig 2; 40pp; English.
XX
CC The present sequence represents a human erythropoietin (EPO) protein. It
CC was used to produce conjugates of the invention. The specification
CC describes a conjugate comprising an EPO glycoprotein having an N-terminal
CC alpha-amino group, chosen from human EPO (hEPO) or its analogues (where
CC hEPO is modified by addition of 1-6 glycosylation sites or a
CC rearrangement of a glycosylation site). The glycoprotein is covalently
CC linked to a poly(ethylene glycol) group. The EPO glycoprotein has in vivo
CC biological activity of causing bone marrow cells to increase production
CC of reticulocytes and red blood cells. The conjugate increased circulating
CC half-life and plasma residence time, decreased clearance, increased
CC clinical activity in vivo, improved potency and stability, when compared
CC to unmodified EPO. The EPO conjugate is useful for preparing medicaments
CC for the treatment and prophylaxis of diseases correlated with anaemia in
CC chronic renal failure patients (CRF), acquired immunodeficiency syndrome
CC (AIDS) and for treating cancer patients undergoing chemotherapy. It is
CC also useful for treating patients by stimulating the division and
CC differentiation of committed erythroid progenitors in the bone marrow
XX
SQ Sequence 166 AA;

Query Match 100.0%; Score 846; DB 5; Length 166;
Best Local Similarity 100.0%; Pred. No. 1.9e-86;
Matches 165; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```
Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
```

RESULT 26
ADG65661
ID ADG65661 standard; protein; 166 AA.
XX
AC ADG65661;

XX
DT 11-MAR-2004 (first entry)
XX
DE Human erythropoitin.
XX
KW human; mouse; T-cell epitope; major histocompatibility complex; MHC;
KW immunogenicity; MHC class II; antibody.
XX
OS Homo sapiens.
XX
PN WO200269232-A2.
XX
PD 06-SEP-2002.
XX
PF 18-FEB-2002; 2002WO-EP001688.
XX
PR 19-FEB-2001; 2001EP-00103954.
PR 08-MAR-2001; 2001EP-00105777.
PR 15-MAR-2001; 2001EP-00106536.
PR 15-MAR-2001; 2001EP-00106538.
PR 20-MAR-2001; 2001EP-00106899.
PR 20-MAR-2001; 2001EP-00107012.
PR 27-MAR-2001; 2001EP-00107568.
PR 25-APR-2001; 2001EP-00110220.
PR 30-MAY-2001; 2001EP-00113228.
PR 19-OCT-2001; 2001EP-00124965.
PR 12-NOV-2001; 2001EP-00126859.
XX
PA (MERE) MERCK PATENT GMBH.
XX
PI Carr FJ, Carter G, Jones T, Williams S, Hamilton A;
XX
DR WPI; 2002-750424/81.
XX
PT Identifying potential T-cell epitope peptides within the amino acid
PT sequence of a biological molecule, useful for preparing a biological
PT molecule with reduced immunogenicity, comprises determining peptide
PT binding to MHC molecules.
XX
PS Example 7; Page 36; 85pp; English.
XX
CC The invention relates to a novel method for identifying one or more
CC potential T-cell epitope peptides within the amino acid sequence of a
CC biological molecule by determining the binding of the peptides to major
CC histocompatibility complex (MHC) molecules using in vitro or in silico
CC techniques or biological assays. The method of the invention is useful
CC for preparing a polypeptide, a protein, a fusion protein, an antibody or
CC their fragments with reduced immunogenicity. The potential T-cell epitope
CC peptide within the amino acid sequence of a parent immunogenically non-
CC modified biological molecule identified is useful for preparing a
CC biological molecule with reduced immunogenicity and having a retained
CC desired biological activity, where the T-cell epitope is a 13mer peptide.
CC The present sequence is used in the exemplification of the invention.
XX
SQ Sequence 166 AA;

Query Match 100.0%; Score 846; DB 5; Length 166;
Best Local Similarity 100.0%; Pred. No. 1.9e-86;
Matches 165; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```
Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
```

```
RESULT 27
ABR39996
ID   ABR39996 standard; protein; 166 AA.
XX
AC   ABR39996;
XX
DT   02-SEP-2003  (first entry)
XX
DE   Human erythropoietin (EPO) sequence.
XX
KW   EPO; erythropoietin; mutein; reticulocyte; red blood cell; antianemic;
KW   AIDS; cancer.
XX
OS   Homo sapiens.
XX
FH   Key             Location/Qualifiers
FT   Disulfide-bond  7. .161
FT                   /note= "disulphide bridge"
FT   Disulfide-bond  29. .33
FT                   /note= "disulphide bridge"
FT   Modified-site   38
FT                   /note= "Asn is N-glycosylated"
FT   Modified-site   83
FT                   /note= "Asn is N-glycosylated"
FT   Modified-site   126
FT                   /note= "Ser is O-glycosylated"
XX
PN   WO2003029291-A2.
XX
PD   10-APR-2003.
XX
PF   20-SEP-2002; 2002WO-EP010556.
XX
PR   25-SEP-2001; 2001EP-00122555.
XX
PA   (HOFF ) HOFFMANN LA ROCHE & CO AG F.
XX
PI   Tischer W;
XX
DR   WPI; 2003-457226/43.
XX
PT   Novel erythropoietin mutein having in vivo biological activity of causing
PT   bone marrow cells to increase production of reticulocytes/red blood
PT   cells, is N-glycosylated at Asn38 and Asn83 but not N-glycosylated at
PT   Asn24.
XX
PS   Claim 6; Page 22; 22pp; English.
XX
CC   The invention relates to an erythropoietin mutein (I) having the in vivo
CC   biological activity of causing bone marrow cells to increase production
CC   of reticulocytes and red blood cells, characterized by being N-
CC   glycosylated at Asn38 and Asn83 but not N-glycosylated at Asn24. (I) or
CC   an aqueous composition comprising an erythropoietin mutein is useful for
CC   the preparation of a medicament for the treatment or prophylaxis of
CC   diseases correlated with anemia in chronic renal failure patients (CRF),
CC   AIDS and for the treatment of cancer patients undergoing chemotherapy.
CC   (I) or the composition is useful for treating a human patient
CC   experiencing blood disorders characterized by low or defective red blood
CC   cell production. (I) is useful for enhancing red blood cell formation.
CC   The present sequence represents a human erythropoietin (EPO) sequence
XX
SQ   Sequence 166 AA;

  Query Match             100.0%;  Score 846;  DB 6;  Length 166;
  Best Local Similarity   100.0%;  Pred. No. 1.9e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 28
ABR57500
ID   ABR57500 standard; protein; 166 AA.
XX
AC   ABR57500;
XX
DT   19-SEP-2003  (first entry)
XX
DE   Human erythropoietin (EPO) amino acid sequence SEQ ID NO:1.
XX
KW   Human; erythropoietin; EPO; hEPO; tranquilliser; cerebroprotective;
KW   anticonvulsant; vasotropic; antiinflammatory; immunosuppressive;
KW   antianaemic; antirheumatic; antiarthritic; anti-HIV; nephrotropic;
KW   red blood cell production stimulator; head trauma; stroke; epilepsy;
KW   ischaemia; hypoxia; immune-mediated inflammation; CNS disorder; HIV;
KW   excessive neuronal excitation; central nervous system disorder;
KW   chronic renal failure; anaemia; chronic inflammatory disease;
KW   rheumatoid arthritis.
XX
OS   Homo sapiens.
XX
PN   WO2003055526-A2.
XX
PD   10-JUL-2003.
XX
PF   18-DEC-2002; 2002WO-DK000871.
XX
PR   21-DEC-2001; 2001DK-00001953.
PR   21-DEC-2001; 2001US-0343501P.
XX
PA   (MAXY-) MAXYGEN APS.
PA   (MAXY-) MAXYGEN HOLDINGS LTD.
XX
PI   Andersen KV;
XX
DR   WPI; 2003-577388/54.
XX
PT   Polypeptide conjugate useful in the treatment of e.g. stroke, head trauma
PT   and hypoxia comprises polymer molecule covalently attached to attachment
PT   site of human erythropoietin-like polypeptide.
XX
PS   Disclosure; Page 61-62; 62pp; English.
XX
CC   The present invention describes a polypeptide conjugate (I), which
CC   comprises at least one polymer molecule (a), covalently attached to an
CC   attachment site of a human erythropoietin-like polypeptide (b), where (b)
CC   comprises at least one removed and/or introduced lysine, cysteine,
CC   aspartic acid or glutamic acid residue compared to the amino acid
CC   sequence of human erythropoietin (hEPO). Also described: (1) a
CC   polypeptide comprising the amino acid sequence of (b); and (2) use of (I)
CC   as a pharmaceutical and in the preparation of a medicament for the
CC   prevention or treatment of disorders involving low or defective red blood
CC   cell production. (I) has tranquilliser, cerebroprotective,
CC   anticonvulsant, vasotropic, antiinflammatory, immunosuppressive,
CC   antianaemic, antirheumatic, antiarthritic, anti-HIV and nephrotropic
CC   activities, and can be used as a red blood cell production stimulator.
CC   (I) can be used as a pharmaceutical; in the manufacture of a medicament
CC   for prevention or treatment of disorders involving low or defective red
CC   blood cell production; and in the treatment of head trauma, stroke,
CC   epilepsy, ischaemia, hypoxia, immune-mediated inflammation, excessive
CC   neuronal excitation and other central nervous system (CNS) related
CC   conditions. Also useful for the treatment of HIV, chronic renal failure,
CC   anaemia in patients with non-myeloid malignancies, chronic inflammatory
CC   disease e.g. rheumatoid arthritis, anaemia associated with chronic
CC   disease, senile anaemia and anaemia in patients undergoing blood
CC   transfusion. The present sequence represents hEPO, which is given in the
```

```
CC   exemplification of the present invention
XX
SQ   Sequence 166 AA;

  Query Match             100.0%;  Score 846;  DB 6;  Length 166;
  Best Local Similarity   100.0%;  Pred. No. 1.9e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 29
ADF70839
ID   ADF70839 standard; protein; 166 AA.
XX
AC   ADF70839;
XX
DT   12-FEB-2004  (first entry)
XX
DE   Human erythropoietin (EPO).
XX
KW   immunostimulant; granulocyte macrophage colony stimulating factor;
KW   GM-CSF; neutropenia; myelosuppressive chemotherapy;
KW   bone marrow transplantation; HIV infection; burn; surgery; dilatation;
KW   anaemia; neonatal septicaemia; severe chronic neutropenia;
KW   aplastic anaemia; acute leukaemia; human; growth hormone super family;
KW   erythropoietin; EPO.
XX
OS   Homo sapiens.
XX
PN   US2003171284-A1.
XX
PD   11-SEP-2003.
XX
PF   15-NOV-2002; 2002US-00298148.
XX
PR   14-JUL-1997;   97US-0052516P.
PR   13-JUL-1998;   98WO-US014497.
PR   14-JAN-2000; 2000US-00462941.
PR   15-NOV-2001; 2001US-0332285P.
PR   11-OCT-2002; 2002US-0418040P.
XX
PA   (COXG/) COX G N.
PA   (DOHE/) DOHERTY D H.
XX
PI   Cox GN,  Doherty DH;
XX
DR   WPI; 2003-898295/82.
XX
PT   Protecting an animal from a disease or condition, useful for treating
PT   neutropenia, comprises administering to an animal having the disease or
PT   condition a composition comprising GM-CSF cysteine mutein.
XX
PS   Example 2; SEQ ID NO 2; 56pp; English.
XX
CC   The invention describes protecting an animal from a disease or condition
CC   that can be treated by wild-type granulocyte macrophage colony
CC   stimulating factor (GM-CSF) comprising administering to an animal having
CC   the disease or condition a composition comprising GM-CSF cysteine mutein.
CC   The methods are useful for preventing or treating the occurrence of
CC   neutropenia in an animal, the neutropenia is selected from neutropenia
CC   resulting from myelosuppressive chemotherapy, neutropenia associated with
CC   bone marrow transplantation, neutropenia associated with infection with
CC   the human immunodeficiency virus, neutropenia associated with burns,
CC   surgery, dilatation, anaemia and neonatal septicaemia, severe chronic
CC   neutropenia, neutropenia associated with aplastic anaemia and acute
CC   leukaemia. This is the amino acid sequence of human erythropoietin (EPO),
CC   a member of the growth hormone super family which also includes
CC   interleukins.
XX
SQ   Sequence 166 AA;

  Query Match             100.0%;  Score 846;  DB 7;  Length 166;
  Best Local Similarity   100.0%;  Pred. No. 1.9e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 30
ADL92150
ID   ADL92150 standard; protein; 166 AA.
XX
AC   ADL92150;
XX
DT   20-MAY-2004  (first entry)
XX
DE   Erythropoietin protein sequence.
XX
KW   harvesting; recombinant; host cell; N-terminal leader peptide;
KW   pre-peptide; lantibiotic; post-translational modification;
KW   pharmaceuticals; vaccine; immunogenic.
XX
OS   Unidentified.
XX
PN   WO2003099862-A1.
XX
PD   04-DEC-2003.
XX
PF   26-MAY-2003; 2003WO-NL000389.
XX
PR   24-MAY-2002; 2002EP-00077060.
PR   07-FEB-2003; 2003US-00360101.
XX
PA   (NANO-) APPLIED NANOSYSTEMS BV.
XX
PI   Moll GN,  Leenhouts CJ,  Kuipers OP,  Driessen AJM;
XX
DR   WPI; 2004-042770/04.
XX
PT   Harvesting a desired polypeptide produced by a recombinant host cell, for
PT   producing pharmaceuticals, comprises selecting a recombinant nucleic acid
PT   comprising nucleic acid fragments encoding a leader peptide and the
PT   polypeptide.
XX
PS   Claim 4; Page 68; 109pp; English.
XX
CC   The invention relates to a novel method for harvesting a (poly)peptide
CC   produced by a recombinant host cell. The novel method involves selecting
CC   a cell comprising a first nucleic acid encoding a leader peptide and a
CC   second nucleic acid fragment encoding the desired (poly)peptide. The
CC   first and second fragments are within the same open reading frame of the
CC   first nucleic acid and the leader peptide is functionally equivalent to
CC   an N-terminal leader peptide found with the pre-peptide of a lantibiotic.
CC   The host cells and nucleic acids are useful for producing, harvesting and
CC   post-translational modification of polypeptides. The polypeptides may be
```

```
CC   used in the production of pharmaceuticals, e.g. as antigen for vaccine or
CC   immunogenic composition. This sequence represents a polypeptide relating
CC   to the novel method of the invention.
XX
SQ   Sequence 166 AA;

  Query Match             100.0%;  Score 846;  DB 8;  Length 166;
  Best Local Similarity   100.0%;  Pred. No. 1.9e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 31
ADK70564
ID   ADK70564 standard; protein; 166 AA.
XX
AC   ADK70564;
XX
DT   20-MAY-2004  (first entry)
XX
DE   Human erythropoietin (EPO) protein mature amino acid sequence.
XX
KW   erythropoietin; EPO; non-immunogenic; immunogenic; EPO manufacture;
KW   erythropoietin manufacture; anaemia; human.
XX
OS   Homo sapiens.
XX
PN   WO2004018515-A2.
XX
PD   04-MAR-2004.
XX
PF   07-AUG-2003; 2003WO-EP008725.
XX
PR   09-AUG-2002; 2002EP-00017914.
XX
PA   (MERE ) MERCK PATENT GMBH.
XX
PI   Baker M,  Carr FJ;
XX
DR   WPI; 2004-226801/21.
XX
PT   New modified human erythropoietin molecules with reduced immunogenicity,
PT   useful in various therapeutic applications such as in the treatment of
PT   anemia.
XX
PS   Disclosure; Page 5; 38pp; English.
XX
CC   This invention relates to a novel modified molecule comprising the
CC   biological activity of human erythropoietin (EPO) and being substantially
CC   non-immunogenic or less immunogenic than any non-modified molecule having
CC   the same biological activity in an individual when used in vivo. The
CC   invention is useful for manufacturing a modified human erythropoietin
CC   molecule. The modified EPO may be used in various therapeutic
CC   applications, such as in the treatment of anaemia. The present sequence
CC   is that of the mature human erythropoietin protein which was used to
CC   derive the modified EPO molecules of the invention.
XX
SQ   Sequence 166 AA;

  Query Match             100.0%;  Score 846;  DB 8;  Length 166;
  Best Local Similarity   100.0%;  Pred. No. 1.9e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 32
ADL88867
ID   ADL88867 standard; protein; 166 AA.
XX
AC   ADL88867;
XX
DT   03-JUN-2004  (first entry)
XX
DE   Human cytokine protein #21.
XX
KW   Human; cytokine; proteolysis; interferon; IFN; interleukin-10; IL-10;
KW   long-chain cytokine family; short-chain cytokine family; infection;
KW   allergy; heart disease; cancer; liver disorder; autoimmune disease;
KW   growth disorder; diabetes; neurodegenerative disease; antimicrobial;
KW   antiallergic; cytostatic; immunosuppressive; antidiabetic;
KW   neuroprotective.
XX
OS   Homo sapiens.
XX
PN   WO2004022593-A2.
XX
PD   18-MAR-2004.
XX
PF   08-SEP-2003; 2003WO-IB004347.
XX
PR   09-SEP-2002; 2002US-0409898P.
PR   21-MAR-2003; 2003US-0457135P.
XX
PA   (NAUT-) NAUTILUS BIOTECH.
XX
PI   Gantier R,  Guyon T,  Vega M,  Drittanti L;
XX
DR   WPI; 2004-248447/23.
XX
PT   New modified cytokines with increased resistance to proteolysis, useful
PT   for diagnosing and treating diseases such as infections, allergies, heart
PT   diseases, cancer, liver disorders, autoimmune diseases or diabetes.
XX
PS   Claim 88; SEQ ID NO 201; 316pp; English.
XX
CC   The invention relates to modified cytokines that exhibit increased
CC   resistance to proteolysis compared to unmodified cytokines. The invention
CC   also relates to nucleic acid molecules encoding the cytokines, a
CC   pharmaceutical composition comprising a nucleic acid molecule in a
CC   pharmaceutical carrier, and a method of generating a protein or peptide
CC   molecule having a predetermined property or activity, or a pre-selected
CC   altered phenotype. The modified cytokine is selected from a member of the
CC   interferons (IFNs)/interleukin (IL)-10 protein family, a member of the
CC   long-chain cytokine family or a member of the short-chain cytokine
CC   family. The composition and method are useful for diagnosing and treating
CC   diseases such as infections, allergies, heart diseases, cancer, liver
CC   disorders, autoimmune diseases, growth disorders, diabetes or
CC   neurodegenerative diseases. This sequence represents a human cytokine
CC   protein of the invention.
XX
SQ   Sequence 166 AA;

  Query Match             100.0%;  Score 846;  DB 8;  Length 166;
  Best Local Similarity   100.0%;  Pred. No. 1.9e-86;
```

```
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 33
ADL06781
ID   ADL06781 standard; protein; 166 AA.
XX
AC   ADL06781;
XX
DT   03-JUN-2004  (first entry)
XX
DE   Human 166 residue erythropoietin (EPO), SEQ ID NO:2.
XX
KW   Human; erythropoietin; EPO; iron distribution disturbance; diabetes;
KW   non-insulin dependent diabetes; type 2 diabetes; reticulocyte production;
KW   red blood cell production; antidiabetic.
XX
OS   Homo sapiens.
XX
PN   WO2004019972-A1.
XX
PD   11-MAR-2004.
XX
PF   20-AUG-2003; 2003WO-EP009194.
XX
PR   29-AUG-2002; 2002EP-00019100.
XX
PA   (HOFF ) HOFFMANN LA ROCHE & CO AG F.
XX
PI   Lehmann P,  Roeddiger R,  Walter-Matsui R;
XX
DR   WPI; 2004-282643/26.
XX
PT   Use of erythropoietin protein in manufacture of medicament for treating
PT   disturbances of iron distribution in diabetes.
XX
PS   Claim 6; SEQ ID NO 2; 31pp; English.
XX
CC   The invention relates to the use of an erythropoietin (EPO) protein for
CC   the treatment of disturbances of iron distribution in diabetes. The
CC   erythropoietin protein is preferably a human erythropoietin (e.g.,
CC   epoetin alpha and epoetin beta) which may be expressed by endogenous gene
CC   activation or an erythropoeitin analogue such as darbepoietin alpha. The
CC   erythropietin protein used in the method may also be modified by the
CC   addition of 1-6 glycosylation sites, or by pegylation. Patients with
CC   diabetes have been found to have a high probablility of be affected by
CC   disturbances of iron distribution. In such patients, the overall
CC   concentration of iron in the body is normal (compared with consitions
CC   such as anaemia), but the individual may suffer the effects of iron
CC   accumulation in certain organs, leading to organ damage and destruction,
CC   and/or experience effects similar to anaemia due to iron usage in blood
CC   cell formation being impaired. Erythropoietin causes bone marrow cells to
CC   increase production of reticulocytes and red blood cells, and this has
CC   been found to have a beneficial effect on iron distibution disturbances
CC   in diabetes e.g., non-insulin dependent (type 2) diabetes. Erythropietin
CC   proteins may therefore be used to manufacture a medicament for the
CC   treatment of disturbances of iron distribution in diabetes. The present
CC   sequence represents a 166 amino acid human erythropoietin which is
CC   specifically claimed for use in the invention.
XX
SQ   Sequence 166 AA;


  Query Match             100.0%;  Score 846;  DB 8;  Length 166;
  Best Local Similarity   100.0%;  Pred. No. 1.9e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 34
ADO59416
ID   ADO59416 standard; protein; 166 AA.
XX
AC   ADO59416;
XX
DT   26-AUG-2004  (first entry)
XX
DE   Human 166 residue erythropoietin (EPO), SEQ ID NO:2.
XX
KW   Human; erythropoietin; EPO; iron distribution disturbance; heart disease;
KW   heart insufficiency; coronary heart disease; atherosclerosis;
KW   acute coronary syndrome; heart failure; congestive heart failure;
KW   reticulocyte production; red blood cell production; cardiant;
KW   antiarteriosclerotic.
XX
OS   Homo sapiens.
XX
PN   WO2004047858-A1.
XX
PD   10-JUN-2004.
XX
PF   17-NOV-2003; 2003WO-EP012822.
XX
PR   22-NOV-2002; 2002EP-00026342.
XX
PA   (HOFF ) HOFFMANN LA ROCHE & CO AG F.
XX
PI   Lehmann P,  Roeddiger R,  Walter-Matsui R;
XX
DR   WPI; 2004-450212/42.
XX
PT   Use of erythropoietin protein in the manufacture of medicament for
PT   treating disturbances of iron distribution in heart diseases e.g. heart
PT   insufficiency.
XX
PS   Claim 6; SEQ ID NO 2; 31pp; English.
XX
CC   The invention relates to the use of an erythropoietin (EPO) protein for
CC   the treatment of disturbances of iron distribution in heart diseases. The
CC   erythropoietin protein is preferably a human erythropoietin (e.g.,
CC   epoetin alpha and epoetin beta) which may be expressed by endogenous gene
CC   activation or an erythropoeitin analogue such as darbepoietin alpha. The
CC   erythropoietin protein used in the method may also be modified by the
CC   addition of 1-6 glycosylation sites, or by pegylation. Patients with
CC   heart diseases have been found to have a high probability of be affected
CC   by disturbances of iron distribution. In such patients, the overall
CC   concentration of iron in the body is normal (compared with conditions
CC   such as anaemia), but the individual may suffer the effects of iron
CC   accumulation in certain organs, leading to organ damage and destruction,
CC   and/or experience effects similar to anaemia due to iron usage in blood
CC   cell formation being impaired. Erythropoietin causes bone marrow cells to
CC   increase production of reticulocytes and red blood cells, and this has
CC   been found to have a beneficial effect on iron distribution disturbances
CC   in heart diseases e.g., heart insufficiency, coronary heart disease,
```

```
CC   atherosclerosis, acute coronary syndrome, heart failure and congestive
CC   heart failure. Erythropoietin proteins may therefore be used to
CC   manufacture a medicament for the treatment of disturbances of iron
CC   distribution in heart diseases. The present sequence represents a 166
CC   amino acid human erythropoietin which is specifically claimed for use in
CC   the invention.
XX
SQ   Sequence 166 AA;

  Query Match             100.0%;  Score 846;  DB 8;  Length 166;
  Best Local Similarity   100.0%;  Pred. No. 1.9e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 35
AAP50299
ID   AAP50299 standard; protein; 167 AA.
XX
AC   AAP50299;
XX
DT   25-MAR-2003  (revised)
DT   01-JAN-1980  (first entry)
XX
DE   Human recombinant erythropoietin expressed in Escherichia coli.
XX
KW   Erythropoietin; red blood cell; erythrocyte; anaemia; blood; disorder;
KW   ds; Escherichia coli.
XX
OS   Homo sapiens.
XX
PN   WO8502610-A.
XX
PD   20-JUN-1985.
XX
PF   11-DEC-1984;   84WO-US002021.
XX
PR   13-DEC-1983;   83US-00561024.
PR   21-FEB-1984;   84US-00582185.
PR   28-SEP-1984;   84US-00655841.
PR   30-NOV-1984;   84US-00675298.
XX
PA   (KIRI ) KIRIN AMGEN INC.
XX
DR   WPI; 1985-159229/26.
DR   N-PSDB; AAN50346.
XX
PT   New polypeptide having properties of erythropoietin - is prepd. by
PT   cultivation of transformed eucaryotic or procaryotic host.
XX
PS   Disclosure; Page 72; 113pp; English.
XX
CC   Human erythropoietin encoded by this sequence is essential for red blood
CC   cell formation and is used for the diagnosis and treatment of blood
CC   disorders such as anaemia. Large amounts of EPO may be obtained using
CC   recombinant DNA techniques in contrast to small amounts obtained from
CC   plasma and urine. This sequence is expressed in E coli. See also
CC   AAN50345, AAN50347-50 and AAP50298, AAP50300-P50301. (Updated on 25-MAR-
CC   2003 to correct PA field.)
XX
SQ   Sequence 167 AA;

  Query Match             100.0%;  Score 846;  DB 1;  Length 167;
  Best Local Similarity   100.0%;  Pred. No. 1.9e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          2 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 61

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         62 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 121

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        122 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 166


RESULT 36
AAP50298
ID   AAP50298 standard; protein; 167 AA.
XX
AC   AAP50298;
XX
DT   25-MAR-2003  (revised)
DT   01-JAN-1980  (first entry)
XX
DE   Human recombinant erythropoietin expressed in Saccahromyces cerevisiae.
XX
KW   Erythropoietin; red blood cell; erythrocyte; anaemia; blood; disorder;
KW   ds; Saccharomyces cerevisiae.
XX
OS   Homo sapiens.
XX
PN   WO8502610-A.
XX
PD   20-JUN-1985.
XX
PF   11-DEC-1984;   84WO-US002021.
XX
PR   13-DEC-1983;   83US-00561024.
PR   21-FEB-1984;   84US-00582185.
PR   28-SEP-1984;   84US-00655841.
PR   30-NOV-1984;   84US-00675298.
XX
PA   (KIRI ) KIRIN AMGEN INC.
XX
DR   WPI; 1985-159229/26.
DR   N-PSDB; AAN50345.
XX
PT   New polypeptide having properties of erythropoietin - is prepd. by
PT   cultivation of transformed eucaryotic or procaryotic host.
XX
PS   Disclosure; Page 82; 113pp; English.
XX
CC   Human erythropoietin encoded by this sequence is essential for red blood
CC   cell formation and is used for the diagnosis and treatment of blood
CC   disorders such as anaemia. Large amounts of EPO may be obtained using
CC   recombinant DNA techniques in contrast to small amounts obtained from
CC   plasma and urine. This sequence is expressed in S. cerevisiae. See also
CC   AAN50346-50 and AAP50299-P50301. (Updated on 25-MAR-2003 to correct PA
CC   field.)
XX
SQ   Sequence 167 AA;

  Query Match             100.0%;  Score 846;  DB 1;  Length 167;
  Best Local Similarity   100.0%;  Pred. No. 1.9e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          2 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 61

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
```

```
                ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          62 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 121

Qy         121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
                |||||||||||||||||||||||||||||||||||||||||||||
Db         122 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 166


RESULT 37
ABB77899
ID   ABB77899 standard; protein; 169 AA.
XX
AC   ABB77899;
XX
DT   07-OCT-2002  (first entry)
XX
DE   Amino acid sequence of a modified human erythropoietin (EPO).
XX
KW   Human; erythropoietin; EPO; glycoprotein; reticulocyte production;
KW   red blood cell production; anaemia; chronic renal failure;
KW   acquired immunodeficiency syndrome; AIDS; cancer; bone marrow;
KW   committed erythroid progenitor.
XX
OS   Synthetic.
OS   Homo sapiens.
XX
FH   Key             Location/Qualifiers
FT   Cleavage-site   1. .3
FT                   /note= "proteolytic cleavage site"
FT   Protein         4. .174
FT                   /note= "EPO protein"
XX
PN   WO200249673-A2.
XX
PD   27-JUN-2002.
XX
PF   08-DEC-2001; 2001WO-EP014434.
XX
PR   20-DEC-2000; 2000EP-00127891.
XX
PA   (HOFF ) HOFFMANN LA ROCHE & CO AG F.
XX
PI   Burg J,  Engel A,  Franze R,  Hilger B,  Schurig HE,  Tischer W;
PI   Wozny M;
XX
DR   WPI; 2002-566640/60.
XX
PT   Novel conjugate of erythropoietin glycoprotein with polyethylene glycol,
PT   useful for treating diseases correlated with anemia in chronic renal
PT   failure patients and acquired immunodeficiency syndrome.
XX
PS   Disclosure; Page 39; 40pp; English.
XX
CC   The present sequence represents a modified human erythropoietin (EPO)
CC   protein. The EPO was extended at the N-terminal by a proteolytic cleavage
CC   site. It was used to produce conjugates of the invention. The
CC   specification describes a conjugate comprising an EPO glycoprotein having
CC   an N-terminal alpha-amino group, chosen from human EPO (hEPO) or its
CC   analogues (where hEPO is modified by addition of 1-6 glycosylation sites
CC   or a rearrangement of a glycosylation site). The glycoprotein is
CC   covalently linked to a poly(ethylene glycol) group. The EPO glycoprotein
CC   has in vivo biological activity of causing bone marrow cells to increase
CC   production of reticulocytes and red blood cells. The conjugate increased
CC   circulating half-life and plasma residence time, decreased clearance,
CC   increased clinical activity in vivo, improved potency and stability, when
CC   compared to unmodified EPO. The EPO conjugate is useful for preparing
CC   medicaments for the treatment and prophylaxis of diseases correlated with
CC   anaemia in chronic renal failure patients (CRF), acquired
CC   immunodeficiency syndrome (AIDS) and for treating cancer patients
CC   undergoing chemotherapy. It is also useful for treating patients by
CC   stimulating the division and differentiation of committed erythroid
CC   progenitors in the bone marrow
XX
SQ   Sequence 169 AA;

  Query Match             100.0%;  Score 846;  DB 5;  Length 169;
  Best Local Similarity   100.0%;  Pred. No. 2e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy           1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
                ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db           4 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 63

Qy          61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
                ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          64 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 123

Qy         121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
                |||||||||||||||||||||||||||||||||||||||||||||
Db         124 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 168


RESULT 38
ABB77898
ID   ABB77898 standard; protein; 174 AA.
XX
AC   ABB77898;
XX
DT   07-OCT-2002  (first entry)
XX
DE   Amino acid sequence of a modified human erythropoietin (EPO).
XX
KW   Human; erythropoietin; EPO; glycoprotein; reticulocyte production;
KW   red blood cell production; anaemia; chronic renal failure;
KW   acquired immunodeficiency syndrome; AIDS; cancer; bone marrow;
KW   committed erythroid progenitor.
XX
OS   Synthetic.
OS   Homo sapiens.
XX
FH   Key             Location/Qualifiers
FT   Cleavage-site   1. .8
FT                   /note= "proteolytic cleavage site"
FT   Protein         9. .174
FT                   /note= "EPO protein"
XX
PN   WO200249673-A2.
XX
PD   27-JUN-2002.
XX
PF   08-DEC-2001; 2001WO-EP014434.
XX
PR   20-DEC-2000; 2000EP-00127891.
XX
PA   (HOFF ) HOFFMANN LA ROCHE & CO AG F.
XX
PI   Burg J,  Engel A,  Franze R,  Hilger B,  Schurig HE,  Tischer W;
PI   Wozny M;
XX
DR   WPI; 2002-566640/60.
XX
PT   Novel conjugate of erythropoietin glycoprotein with polyethylene glycol,
PT   useful for treating diseases correlated with anemia in chronic renal
PT   failure patients and acquired immunodeficiency syndrome.
XX
PS   Disclosure; Page 38-39; 40pp; English.
XX
CC   The present sequence represents a modified human erythropoietin (EPO)
CC   protein. The EPO was extended at the N-terminal by a proteolytic cleavage
CC   site. It was used to produce conjugates of the invention. The
CC   specification describes a conjugate comprising an EPO glycoprotein having
CC   an N-terminal alpha-amino group, chosen from human EPO (hEPO) or its
CC   analogues (where hEPO is modified by addition of 1-6 glycosylation sites
CC   or a rearrangement of a glycosylation site). The glycoprotein is
CC   covalently linked to a poly(ethylene glycol) group. The EPO glycoprotein
CC   has in vivo biological activity of causing bone marrow cells to increase
```

```
CC   production of reticulocytes and red blood cells. The conjugate increased
CC   circulating half-life and plasma residence time, decreased clearance,
CC   increased clinical activity in vivo, improved potency and stability, when
CC   compared to unmodified EPO. The EPO conjugate is useful for preparing
CC   medicaments for the treatment and prophylaxis of diseases correlated with
CC   anaemia in chronic renal failure patients (CRF), acquired
CC   immunodeficiency syndrome (AIDS) and for treating cancer patients
CC   undergoing chemotherapy. It is also useful for treating patients by
CC   stimulating the division and differentiation of committed erythroid
CC   progenitors in the bone marrow
XX
SQ   Sequence 174 AA;

  Query Match             100.0%;  Score 846;  DB 5;  Length 174;
  Best Local Similarity   100.0%;  Pred. No. 2.1e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          9 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 68

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         69 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 128

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        129 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 173


RESULT 39
ABB77900
ID   ABB77900 standard; protein; 174 AA.
XX
AC   ABB77900;
XX
DT   07-OCT-2002  (first entry)
XX
DE   Amino acid sequence of a modified human erythropoietin (EPO).
XX
KW   Human; erythropoietin; EPO; glycoprotein; reticulocyte production;
KW   red blood cell production; anaemia; chronic renal failure;
KW   acquired immunodeficiency syndrome; AIDS; cancer; bone marrow;
KW   committed erythroid progenitor.
XX
OS   Synthetic.
OS   Homo sapiens.
XX
FH   Key             Location/Qualifiers
FT   Cleavage-site   1. .8
FT                   /note= "proteolytic cleavage site"
FT   Protein         9. .174
FT                   /note= "EPO protein"
XX
PN   WO200249673-A2.
XX
PD   27-JUN-2002.
XX
PF   08-DEC-2001; 2001WO-EP014434.
XX
PR   20-DEC-2000; 2000EP-00127891.
XX
PA   (HOFF ) HOFFMANN LA ROCHE & CO AG F.
XX
PI   Burg J,  Engel A,  Franze R,  Hilger B,  Schurig HE,  Tischer W;
PI   Wozny M;
XX
DR   WPI; 2002-566640/60.
XX
PT   Novel conjugate of erythropoietin glycoprotein with polyethylene glycol,
PT   useful for treating diseases correlated with anemia in chronic renal
PT   failure patients and acquired immunodeficiency syndrome.
XX
PS   Disclosure; Page 39-40; 40pp; English.
XX
CC   The present sequence represents a modified human erythropoietin (EPO)
CC   protein. The EPO was extended at the N-terminal by a proteolytic cleavage
CC   site. It was used to produce conjugates of the invention. The
CC   specification describes a conjugate comprising an EPO glycoprotein having
CC   an N-terminal alpha-amino group, chosen from human EPO (hEPO) or its
CC   analogues (where hEPO is modified by addition of 1-6 glycosylation sites
CC   or a rearrangement of a glycosylation site). The glycoprotein is
CC   covalently linked to a poly(ethylene glycol) group. The EPO glycoprotein
CC   has in vivo biological activity of causing bone marrow cells to increase
CC   production of reticulocytes and red blood cells. The conjugate increased
CC   circulating half-life and plasma residence time, decreased clearance,
CC   increased clinical activity in vivo, improved potency and stability, when
CC   compared to unmodified EPO. The EPO conjugate is useful for preparing
CC   medicaments for the treatment and prophylaxis of diseases correlated with
CC   anaemia in chronic renal failure patients (CRF), acquired
CC   immunodeficiency syndrome (AIDS) and for treating cancer patients
CC   undergoing chemotherapy. It is also useful for treating patients by
CC   stimulating the division and differentiation of committed erythroid
CC   progenitors in the bone marrow
XX
SQ   Sequence 174 AA;

  Query Match             100.0%;  Score 846;  DB 5;  Length 174;
  Best Local Similarity   100.0%;  Pred. No. 2.1e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          9 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 68

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         69 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 128

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        129 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 173


RESULT 40
AAP60599
ID   AAP60599 standard; protein; 188 AA.
XX
AC   AAP60599;
XX
DT   25-MAR-2003  (revised)
DT   01-JAN-1980  (first entry)
XX
DE   Clone lambda HEPOFL16 encoding human erthropoietin.
XX
KW   Erythropoietin; lamba HEPOFL16; recombinant plasmid vector; anaemia;
KW   mammal cell culture; 3T3; CHO; Chinese hamster ovary; ss.
XX
OS   Homo sapiens.
XX
PN   WO8603520-A.
XX
PD   19-JUN-1986.
XX
PF   03-DEC-1985;   85WO-US002405.
XX
PR   04-DEC-1984;   84US-00677813.
PR   03-JAN-1985;   85US-00688622.
PR   22-JAN-1985;   85US-00693258.
XX
PA   (GEMY ) GENETICS INST INC.
PA   (FRIT/) FRITSCHE E.
XX
PI   Fritsch E,  Hewick RM,  Jacobs K;
XX
DR   WPI; 1986-169459/26.
```

```
DR   N-PSDB; AAN60519.
XX
PT   Prodn. of human cDNA clone expressing erythropoietin - for mass prodn. of
PT   erythropoietin, useful for treating anaemia.
XX
PS   Disclosure; Page 20; 61pp; English.
XX
CC   A recombinant plasmid vector expressing this clone is expressed in e. g
CC   3T3 or CHO cell cultures. The produced erythropoietin is useful for
CC   treatment of anaemia, especially renal anaemia. The cloned gene expresses
CC   high levels of the protein and thus provides a means of mass production.
CC   See also AAN60513-18, AAN60520-21 and AAP60598. (Updated on 25-MAR-2003
CC   to correct PA field.)
XX
SQ   Sequence 188 AA;

  Query Match             100.0%;  Score 846;  DB 1;  Length 188;
  Best Local Similarity   100.0%;  Pred. No. 2.3e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         23 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 82

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         83 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 142

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        143 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 187


RESULT 41
AAP81195
ID   AAP81195 standard; protein; 188 AA.
XX
AC   AAP81195;
XX
DT   25-MAR-2003  (revised)
DT   20-NOV-1990  (first entry)
XX
DE   Erythropoietin encoded by EPO 140B.
XX
KW   EPO; erythropoietin; anaemia; renal failure.
XX
OS   Homo sapiens.
XX
FH   Key             Location/Qualifiers
FT   Peptide         1. .22
FT                   /label= leader sequence
FT   Protein         23. .188
FT                   /label= EPO
XX
PN   EP267678-A.
XX
PD   18-MAY-1988.
XX
PF   15-SEP-1987;   87EP-00308130.
XX
PR   15-SEP-1986;   86US-00907369.
XX
PA   (INUA ) INTEGRATED GENETICS INC.
XX
PI   Beck AK,  Withy RM,  Zabrecky JR,  Masiello NC;
XX
DR   WPI; 1988-134531/20.
DR   N-PSDB; AAN81554.
XX
PT   Recombinant human erythropoietin - produced by a transformed rodent
PT   epitheloid cell capable of producing N-linked and O-linked glycosylated
PT   human erythropoietin.
XX
PS   Disclosure; Page ?; 23pp; English.
XX
CC   EPO 104B was one of four positive clones isolated from a cDNA library
CC   prepd. from mRNA extracted from a human foetus of about 20 wk. gestation.
CC   The clone was identified using two probes, EPO1 and EPO2 based on the
CC   published sequence of EPO (Nature (1985) Vol.313, p.806). The sequence
CC   between nucleotides 63 and 724 has 100% homo- logy with the published
CC   sequence. It encodes the 166 AAs of the mature EPO protein and 22 AAs of
CC   the leader sequence. This clone and a second, EPO 125, were used to
CC   construct a full length clone which was expressed in rodent epithelial
CC   cells. See also AAP81196. (Updated on 25-MAR-2003 to correct PA field.)
CC   (Updated on 25-MAR-2003 to correct PI field.)
XX
SQ   Sequence 188 AA;

  Query Match             100.0%;  Score 846;  DB 1;  Length 188;
  Best Local Similarity   100.0%;  Pred. No. 2.3e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         23 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 82

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         83 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 142

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        143 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 187


RESULT 42
ADF16588
ID   ADF16588 standard; protein; 192 AA.
XX
AC   ADF16588;
XX
DT   12-FEB-2004  (first entry)
XX
DE   Human albumin fusion protein-related protein SeqID1690.
XX
KW   albumin fusion protein; albumin activity; human serum albumin;
KW   serum osmotic pressure; shelf-life; stability; antidiabetic;
KW   gene therapy; diabetes mellitus; human; gene; ds.
XX
OS   Homo sapiens.
XX
PN   WO2003060071-A2.
XX
PD   24-JUL-2003.
XX
PF   23-DEC-2002; 2002WO-US040891.
XX
PR   21-DEC-2001; 2001US-0341811P.
PR   24-JAN-2002; 2002US-0350358P.
PR   28-JAN-2002; 2002US-0351360P.
PR   26-FEB-2002; 2002US-0359370P.
PR   28-FEB-2002; 2002US-0360000P.
PR   27-MAR-2002; 2002US-0367500P.
PR   08-APR-2002; 2002US-0370227P.
PR   10-MAY-2002; 2002US-0378950P.
PR   24-MAY-2002; 2002US-0382617P.
PR   28-MAY-2002; 2002US-0383123P.
PR   05-JUN-2002; 2002US-0385708P.
PR   10-JUL-2002; 2002US-0394625P.
PR   24-JUL-2002; 2002US-0398008P.
PR   09-AUG-2002; 2002US-0402131P.
PR   13-AUG-2002; 2002US-0402708P.
PR   18-SEP-2002; 2002US-0411355P.
PR   18-SEP-2002; 2002US-0411426P.
PR   02-OCT-2002; 2002US-0414984P.
PR   11-OCT-2002; 2002US-0417611P.
```

```
PR   23-OCT-2002; 2002US-0420246P.
PR   05-NOV-2002; 2002US-0423623P.
XX
PA   (HUMA-) HUMAN GENOME SCI INC.
PA   (DELZ ) DELTA BIOTECHNOLOGY LTD.
PA   (PRIN-) PRINCIPIA PHARM CORP.
XX
PI   Ballance DJ,  Turner AJ,  Rosen CA,  Haseltine WA;
XX
DR   WPI; 2003-598517/56.
DR   N-PSDB; ADF16262.
XX
PT   New albumin fusion protein, useful for preparing a composition for
PT   treating diabetes mellitus.
XX
PS   Example 4; SEQ ID NO 1690; 24pp; English.
XX
CC   This invention relates to a novel albumin fusion protein having albumin
CC   or biological activity. Human serum albumin is responsible for a
CC   significant proportion of the osmotic pressure of serum and also
CC   functions as a carrier of endogenous and exogenous ligands. The fusion of
CC   albumin to a therapeutic protein may increase shelf-life and stability of
CC   the therapeutic protein. The albumin fusion protein of the invention may
CC   allow production of compositions with antidiabetic activity whilst the
CC   nucleotide sequence which encodes it may be useful for gene therapy. The
CC   albumin fusion protein is useful for preparing a composition for treating
CC   diabetes mellitus. The present sequence is that of a therapeutic protein
CC   which was fused with human albumin to create a novel albumin fusion
CC   protein of the invention. Note: The sequence data for this patent did not
CC   form part of the printed specification, but was obtained in electronic
CC   format directly from WIPO at ftp.wipo.int/pub/publishedpct_sequences
XX
SQ   Sequence 192 AA;

  Query Match             100.0%;  Score 846;  DB 7;  Length 192;
  Best Local Similarity   100.0%;  Pred. No. 2.4e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 43
ADF16589
ID   ADF16589 standard; protein; 192 AA.
XX
AC   ADF16589;
XX
DT   12-FEB-2004  (first entry)
XX
DE   Human albumin fusion protein-related protein SeqID1691.
XX
KW   albumin fusion protein; albumin activity; human serum albumin;
KW   serum osmotic pressure; shelf-life; stability; antidiabetic;
KW   gene therapy; diabetes mellitus; human; gene; ds.
XX
OS   Homo sapiens.
XX
PN   WO2003060071-A2.
XX
PD   24-JUL-2003.
XX
PF   23-DEC-2002; 2002WO-US040891.
XX
PR   21-DEC-2001; 2001US-0341811P.
PR   24-JAN-2002; 2002US-0350358P.
PR   28-JAN-2002; 2002US-0351360P.
PR   26-FEB-2002; 2002US-0359370P.
PR   28-FEB-2002; 2002US-0360000P.
PR   27-MAR-2002; 2002US-0367500P.
PR   08-APR-2002; 2002US-0370227P.
PR   10-MAY-2002; 2002US-0378950P.
PR   24-MAY-2002; 2002US-0382617P.
PR   28-MAY-2002; 2002US-0383123P.
PR   05-JUN-2002; 2002US-0385708P.
PR   10-JUL-2002; 2002US-0394625P.
PR   24-JUL-2002; 2002US-0398008P.
PR   09-AUG-2002; 2002US-0402131P.
PR   13-AUG-2002; 2002US-0402708P.
PR   18-SEP-2002; 2002US-0411355P.
PR   18-SEP-2002; 2002US-0411426P.
PR   02-OCT-2002; 2002US-0414984P.
PR   11-OCT-2002; 2002US-0417611P.
PR   23-OCT-2002; 2002US-0420246P.
PR   05-NOV-2002; 2002US-0423623P.
XX
PA   (HUMA-) HUMAN GENOME SCI INC.
PA   (DELZ ) DELTA BIOTECHNOLOGY LTD.
PA   (PRIN-) PRINCIPIA PHARM CORP.
XX
PI   Ballance DJ,  Turner AJ,  Rosen CA,  Haseltine WA;
XX
DR   WPI; 2003-598517/56.
DR   N-PSDB; ADF16263.
XX
PT   New albumin fusion protein, useful for preparing a composition for
PT   treating diabetes mellitus.
XX
PS   Example 4; SEQ ID NO 1691; 24pp; English.
XX
CC   This invention relates to a novel albumin fusion protein having albumin
CC   or biological activity. Human serum albumin is responsible for a
CC   significant proportion of the osmotic pressure of serum and also
CC   functions as a carrier of endogenous and exogenous ligands. The fusion of
CC   albumin to a therapeutic protein may increase shelf-life and stability of
CC   the therapeutic protein. The albumin fusion protein of the invention may
CC   allow production of compositions with antidiabetic activity whilst the
CC   nucleotide sequence which encodes it may be useful for gene therapy. The
CC   albumin fusion protein is useful for preparing a composition for treating
CC   diabetes mellitus. The present sequence is that of a therapeutic protein
CC   which was fused with human albumin to create a novel albumin fusion
CC   protein of the invention. Note: The sequence data for this patent did not
CC   form part of the printed specification, but was obtained in electronic
CC   format directly from WIPO at ftp.wipo.int/pub/publishedpct_sequences
XX
SQ   Sequence 192 AA;

  Query Match             100.0%;  Score 846;  DB 7;  Length 192;
  Best Local Similarity   100.0%;  Pred. No. 2.4e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 44
ADF15305
ID   ADF15305 standard; protein; 192 AA.
```

```
XX
AC   ADF15305;
XX
DT   12-FEB-2004  (first entry)
XX
DE   Human albumin fusion protein-related protein SeqID603.
XX
KW   albumin fusion protein; albumin activity; human serum albumin;
KW   serum osmotic pressure; shelf-life; stability; antidiabetic;
KW   gene therapy; diabetes mellitus; human; gene; ds.
XX
OS   Homo sapiens.
XX
PN   WO2003060071-A2.
XX
PD   24-JUL-2003.
XX
PF   23-DEC-2002; 2002WO-US040891.
XX
PR   21-DEC-2001; 2001US-0341811P.
PR   24-JAN-2002; 2002US-0350358P.
PR   28-JAN-2002; 2002US-0351360P.
PR   26-FEB-2002; 2002US-0359370P.
PR   28-FEB-2002; 2002US-0360000P.
PR   27-MAR-2002; 2002US-0367500P.
PR   08-APR-2002; 2002US-0370227P.
PR   10-MAY-2002; 2002US-0378950P.
PR   24-MAY-2002; 2002US-0382617P.
PR   28-MAY-2002; 2002US-0383123P.
PR   05-JUN-2002; 2002US-0385708P.
PR   10-JUL-2002; 2002US-0394625P.
PR   24-JUL-2002; 2002US-0398008P.
PR   09-AUG-2002; 2002US-0402131P.
PR   13-AUG-2002; 2002US-0402708P.
PR   18-SEP-2002; 2002US-0411355P.
PR   18-SEP-2002; 2002US-0411426P.
PR   02-OCT-2002; 2002US-0414984P.
PR   11-OCT-2002; 2002US-0417611P.
PR   23-OCT-2002; 2002US-0420246P.
PR   05-NOV-2002; 2002US-0423623P.
XX
PA   (HUMA-) HUMAN GENOME SCI INC.
PA   (DELZ ) DELTA BIOTECHNOLOGY LTD.
PA   (PRIN-) PRINCIPIA PHARM CORP.
XX
PI   Ballance DJ,  Turner AJ,  Rosen CA,  Haseltine WA;
XX
DR   WPI; 2003-598517/56.
DR   N-PSDB; ADF15870.
XX
PT   New albumin fusion protein, useful for preparing a composition for
PT   treating diabetes mellitus.
XX
PS   Example 4; SEQ ID NO 603; 24pp; English.
XX
CC   This invention relates to a novel albumin fusion protein having albumin
CC   or biological activity. Human serum albumin is responsible for a
CC   significant proportion of the osmotic pressure of serum and also
CC   functions as a carrier of endogenous and exogenous ligands. The fusion of
CC   albumin to a therapeutic protein may increase shelf-life and stability of
CC   the therapeutic protein. The albumin fusion protein of the invention may
CC   allow production of compositions with antidiabetic activity whilst the
CC   nucleotide sequence which encodes it may be useful for gene therapy. The
CC   albumin fusion protein is useful for preparing a composition for treating
CC   diabetes mellitus. The present sequence is that of a therapeutic protein
CC   which was fused with human albumin to create a novel albumin fusion
CC   protein of the invention. Note: The sequence data for this patent did not
CC   form part of the printed specification, but was obtained in electronic
CC   format directly from WIPO at ftp.wipo.int/pub/publishedpct_sequences
XX
SQ   Sequence 192 AA;

  Query Match             100.0%;  Score 846;  DB 7;  Length 192;
  Best Local Similarity   100.0%;  Pred. No. 2.4e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 45
ADF16727
ID   ADF16727 standard; protein; 192 AA.
XX
AC   ADF16727;
XX
DT   12-FEB-2004  (first entry)
XX
DE   Human albumin fusion protein-related protein SeqID1829.
XX
KW   albumin fusion protein; albumin activity; human serum albumin;
KW   serum osmotic pressure; shelf-life; stability; antidiabetic;
KW   gene therapy; diabetes mellitus; human; gene; ds.
XX
OS   Homo sapiens.
XX
PN   WO2003060071-A2.
XX
PD   24-JUL-2003.
XX
PF   23-DEC-2002; 2002WO-US040891.
XX
PR   21-DEC-2001; 2001US-0341811P.
PR   24-JAN-2002; 2002US-0350358P.
PR   28-JAN-2002; 2002US-0351360P.
PR   26-FEB-2002; 2002US-0359370P.
PR   28-FEB-2002; 2002US-0360000P.
PR   27-MAR-2002; 2002US-0367500P.
PR   08-APR-2002; 2002US-0370227P.
PR   10-MAY-2002; 2002US-0378950P.
PR   24-MAY-2002; 2002US-0382617P.
PR   28-MAY-2002; 2002US-0383123P.
PR   05-JUN-2002; 2002US-0385708P.
PR   10-JUL-2002; 2002US-0394625P.
PR   24-JUL-2002; 2002US-0398008P.
PR   09-AUG-2002; 2002US-0402131P.
PR   13-AUG-2002; 2002US-0402708P.
PR   18-SEP-2002; 2002US-0411355P.
PR   18-SEP-2002; 2002US-0411426P.
PR   02-OCT-2002; 2002US-0414984P.
PR   11-OCT-2002; 2002US-0417611P.
PR   23-OCT-2002; 2002US-0420246P.
PR   05-NOV-2002; 2002US-0423623P.
XX
PA   (HUMA-) HUMAN GENOME SCI INC.
PA   (DELZ ) DELTA BIOTECHNOLOGY LTD.
PA   (PRIN-) PRINCIPIA PHARM CORP.
XX
PI   Ballance DJ,  Turner AJ,  Rosen CA,  Haseltine WA;
XX
DR   WPI; 2003-598517/56.
DR   N-PSDB; ADF16401.
XX
PT   New albumin fusion protein, useful for preparing a composition for
PT   treating diabetes mellitus.
XX
PS   Example 4; SEQ ID NO 1829; 24pp; English.
```

```
XX
CC   This invention relates to a novel albumin fusion protein having albumin
CC   or biological activity. Human serum albumin is responsible for a
CC   significant proportion of the osmotic pressure of serum and also
CC   functions as a carrier of endogenous and exogenous ligands. The fusion of
CC   albumin to a therapeutic protein may increase shelf-life and stability of
CC   the therapeutic protein. The albumin fusion protein of the invention may
CC   allow production of compositions with antidiabetic activity whilst the
CC   nucleotide sequence which encodes it may be useful for gene therapy. The
CC   albumin fusion protein is useful for preparing a composition for treating
CC   diabetes mellitus. The present sequence is that of a therapeutic protein
CC   which was fused with human albumin to create a novel albumin fusion
CC   protein of the invention. Note: The sequence data for this patent did not
CC   form part of the printed specification, but was obtained in electronic
CC   format directly from WIPO at ftp.wipo.int/pub/publishedpct_sequences
XX
SQ   Sequence 192 AA;

  Query Match             100.0%;  Score 846;  DB 7;  Length 192;
  Best Local Similarity   100.0%;  Pred. No. 2.4e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 46
ADF16726
ID   ADF16726 standard; protein; 192 AA.
XX
AC   ADF16726;
XX
DT   12-FEB-2004  (first entry)
XX
DE   Human albumin fusion protein-related protein SeqID1828.
XX
KW   albumin fusion protein; albumin activity; human serum albumin;
KW   serum osmotic pressure; shelf-life; stability; antidiabetic;
KW   gene therapy; diabetes mellitus; human; gene; ds.
XX
OS   Homo sapiens.
XX
PN   WO2003060071-A2.
XX
PD   24-JUL-2003.
XX
PF   23-DEC-2002; 2002WO-US040891.
XX
PR   21-DEC-2001; 2001US-0341811P.
PR   24-JAN-2002; 2002US-0350358P.
PR   28-JAN-2002; 2002US-0351360P.
PR   26-FEB-2002; 2002US-0359370P.
PR   28-FEB-2002; 2002US-0360000P.
PR   27-MAR-2002; 2002US-0367500P.
PR   08-APR-2002; 2002US-0370227P.
PR   10-MAY-2002; 2002US-0378950P.
PR   24-MAY-2002; 2002US-0382617P.
PR   28-MAY-2002; 2002US-0383123P.
PR   05-JUN-2002; 2002US-0385708P.
PR   10-JUL-2002; 2002US-0394625P.
PR   24-JUL-2002; 2002US-0398008P.
PR   09-AUG-2002; 2002US-0402131P.
PR   13-AUG-2002; 2002US-0402708P.
PR   18-SEP-2002; 2002US-0411355P.
PR   18-SEP-2002; 2002US-0411426P.
PR   02-OCT-2002; 2002US-0414984P.
PR   11-OCT-2002; 2002US-0417611P.
PR   23-OCT-2002; 2002US-0420246P.
PR   05-NOV-2002; 2002US-0423623P.
XX
PA   (HUMA-) HUMAN GENOME SCI INC.
PA   (DELZ ) DELTA BIOTECHNOLOGY LTD.
PA   (PRIN-) PRINCIPIA PHARM CORP.
XX
PI   Ballance DJ,  Turner AJ,  Rosen CA,  Haseltine WA;
XX
DR   WPI; 2003-598517/56.
DR   N-PSDB; ADF16400.
XX
PT   New albumin fusion protein, useful for preparing a composition for
PT   treating diabetes mellitus.
XX
PS   Example 4; SEQ ID NO 1828; 24pp; English.
XX
CC   This invention relates to a novel albumin fusion protein having albumin
CC   or biological activity. Human serum albumin is responsible for a
CC   significant proportion of the osmotic pressure of serum and also
CC   functions as a carrier of endogenous and exogenous ligands. The fusion of
CC   albumin to a therapeutic protein may increase shelf-life and stability of
CC   the therapeutic protein. The albumin fusion protein of the invention may
CC   allow production of compositions with antidiabetic activity whilst the
CC   nucleotide sequence which encodes it may be useful for gene therapy. The
CC   albumin fusion protein is useful for preparing a composition for treating
CC   diabetes mellitus. The present sequence is that of a therapeutic protein
CC   which was fused with human albumin to create a novel albumin fusion
CC   protein of the invention. Note: The sequence data for this patent did not
CC   form part of the printed specification, but was obtained in electronic
CC   format directly from WIPO at ftp.wipo.int/pub/publishedpct_sequences
XX
SQ   Sequence 192 AA;

  Query Match             100.0%;  Score 846;  DB 7;  Length 192;
  Best Local Similarity   100.0%;  Pred. No. 2.4e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 47
ADF15296
ID   ADF15296 standard; protein; 192 AA.
XX
AC   ADF15296;
XX
DT   12-FEB-2004  (first entry)
XX
DE   Human albumin fusion protein-related protein SeqID594.
XX
KW   albumin fusion protein; albumin activity; human serum albumin;
KW   serum osmotic pressure; shelf-life; stability; antidiabetic;
KW   gene therapy; diabetes mellitus; human; gene; ds.
XX
OS   Homo sapiens.
XX
PN   WO2003060071-A2.
XX
PD   24-JUL-2003.
```

```
XX
PF   23-DEC-2002; 2002WO-US040891.
XX
PR   21-DEC-2001; 2001US-0341811P.
PR   24-JAN-2002; 2002US-0350358P.
PR   28-JAN-2002; 2002US-0351360P.
PR   26-FEB-2002; 2002US-0359370P.
PR   28-FEB-2002; 2002US-0360000P.
PR   27-MAR-2002; 2002US-0367500P.
PR   08-APR-2002; 2002US-0370227P.
PR   10-MAY-2002; 2002US-0378950P.
PR   24-MAY-2002; 2002US-0382617P.
PR   28-MAY-2002; 2002US-0383123P.
PR   05-JUN-2002; 2002US-0385708P.
PR   10-JUL-2002; 2002US-0394625P.
PR   24-JUL-2002; 2002US-0398008P.
PR   09-AUG-2002; 2002US-0402131P.
PR   13-AUG-2002; 2002US-0402708P.
PR   18-SEP-2002; 2002US-0411355P.
PR   18-SEP-2002; 2002US-0411426P.
PR   02-OCT-2002; 2002US-0414984P.
PR   11-OCT-2002; 2002US-0417611P.
PR   23-OCT-2002; 2002US-0420246P.
PR   05-NOV-2002; 2002US-0423623P.
XX
PA   (HUMA-) HUMAN GENOME SCI INC.
PA   (DELZ ) DELTA BIOTECHNOLOGY LTD.
PA   (PRIN-) PRINCIPIA PHARM CORP.
XX
PI   Ballance DJ,  Turner AJ,  Rosen CA,  Haseltine WA;
XX
DR   WPI; 2003-598517/56.
DR   N-PSDB; ADF15861.
XX
PT   New albumin fusion protein, useful for preparing a composition for
PT   treating diabetes mellitus.
XX
PS   Example 4; SEQ ID NO 594; 24pp; English.
XX
CC   This invention relates to a novel albumin fusion protein having albumin
CC   or biological activity. Human serum albumin is responsible for a
CC   significant proportion of the osmotic pressure of serum and also
CC   functions as a carrier of endogenous and exogenous ligands. The fusion of
CC   albumin to a therapeutic protein may increase shelf-life and stability of
CC   the therapeutic protein. The albumin fusion protein of the invention may
CC   allow production of compositions with antidiabetic activity whilst the
CC   nucleotide sequence which encodes it may be useful for gene therapy. The
CC   albumin fusion protein is useful for preparing a composition for treating
CC   diabetes mellitus. The present sequence is that of a therapeutic protein
CC   which was fused with human albumin to create a novel albumin fusion
CC   protein of the invention. Note: The sequence data for this patent did not
CC   form part of the printed specification, but was obtained in electronic
CC   format directly from WIPO at ftp.wipo.int/pub/publishedpct_sequences
XX
SQ   Sequence 192 AA;

  Query Match             100.0%;  Score 846;  DB 7;  Length 192;
  Best Local Similarity   100.0%;  Pred. No. 2.4e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192
```

```
RESULT 48
ADF16728
ID   ADF16728 standard; protein; 192 AA.
XX
AC   ADF16728;
XX
DT   12-FEB-2004  (first entry)
XX
DE   Human albumin fusion protein-related protein SeqID1830.
XX
KW   albumin fusion protein; albumin activity; human serum albumin;
KW   serum osmotic pressure; shelf-life; stability; antidiabetic;
KW   gene therapy; diabetes mellitus; human; gene; ds.
XX
OS   Homo sapiens.
XX
PN   WO2003060071-A2.
XX
PD   24-JUL-2003.
XX
PF   23-DEC-2002; 2002WO-US040891.
XX
PR   21-DEC-2001; 2001US-0341811P.
PR   24-JAN-2002; 2002US-0350358P.
PR   28-JAN-2002; 2002US-0351360P.
PR   26-FEB-2002; 2002US-0359370P.
PR   28-FEB-2002; 2002US-0360000P.
PR   27-MAR-2002; 2002US-0367500P.
PR   08-APR-2002; 2002US-0370227P.
PR   10-MAY-2002; 2002US-0378950P.
PR   24-MAY-2002; 2002US-0382617P.
PR   28-MAY-2002; 2002US-0383123P.
PR   05-JUN-2002; 2002US-0385708P.
PR   10-JUL-2002; 2002US-0394625P.
PR   24-JUL-2002; 2002US-0398008P.
PR   09-AUG-2002; 2002US-0402131P.
PR   13-AUG-2002; 2002US-0402708P.
PR   18-SEP-2002; 2002US-0411355P.
PR   18-SEP-2002; 2002US-0411426P.
PR   02-OCT-2002; 2002US-0414984P.
PR   11-OCT-2002; 2002US-0417611P.
PR   23-OCT-2002; 2002US-0420246P.
PR   05-NOV-2002; 2002US-0423623P.
XX
PA   (HUMA-) HUMAN GENOME SCI INC.
PA   (DELZ ) DELTA BIOTECHNOLOGY LTD.
PA   (PRIN-) PRINCIPIA PHARM CORP.
XX
PI   Ballance DJ,  Turner AJ,  Rosen CA,  Haseltine WA;
XX
DR   WPI; 2003-598517/56.
DR   N-PSDB; ADF16402.
XX
PT   New albumin fusion protein, useful for preparing a composition for
PT   treating diabetes mellitus.
XX
PS   Example 4; SEQ ID NO 1830; 24pp; English.
XX
CC   This invention relates to a novel albumin fusion protein having albumin
CC   or biological activity. Human serum albumin is responsible for a
CC   significant proportion of the osmotic pressure of serum and also
CC   functions as a carrier of endogenous and exogenous ligands. The fusion of
CC   albumin to a therapeutic protein may increase shelf-life and stability of
CC   the therapeutic protein. The albumin fusion protein of the invention may
CC   allow production of compositions with antidiabetic activity whilst the
CC   nucleotide sequence which encodes it may be useful for gene therapy. The
CC   albumin fusion protein is useful for preparing a composition for treating
CC   diabetes mellitus. The present sequence is that of a therapeutic protein
CC   which was fused with human albumin to create a novel albumin fusion
CC   protein of the invention. Note: The sequence data for this patent did not
CC   form part of the printed specification, but was obtained in electronic
CC   format directly from WIPO at ftp.wipo.int/pub/publishedpct_sequences
XX
```

```
SQ   Sequence 192 AA;

  Query Match             100.0%;  Score 846;  DB 7;  Length 192;
  Best Local Similarity   100.0%;  Pred. No. 2.4e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 49
ADF15295
ID   ADF15295 standard; protein; 192 AA.
XX
AC   ADF15295;
XX
DT   12-FEB-2004  (first entry)
XX
DE   Human albumin fusion protein-related protein SeqID593.
XX
KW   albumin fusion protein; albumin activity; human serum albumin;
KW   serum osmotic pressure; shelf-life; stability; antidiabetic;
KW   gene therapy; diabetes mellitus; human; gene; ds.
XX
OS   Homo sapiens.
XX
PN   WO2003060071-A2.
XX
PD   24-JUL-2003.
XX
PF   23-DEC-2002; 2002WO-US040891.
XX
PR   21-DEC-2001; 2001US-0341811P.
PR   24-JAN-2002; 2002US-0350358P.
PR   28-JAN-2002; 2002US-0351360P.
PR   26-FEB-2002; 2002US-0359370P.
PR   28-FEB-2002; 2002US-0360000P.
PR   27-MAR-2002; 2002US-0367500P.
PR   08-APR-2002; 2002US-0370227P.
PR   10-MAY-2002; 2002US-0378950P.
PR   24-MAY-2002; 2002US-0382617P.
PR   28-MAY-2002; 2002US-0383123P.
PR   05-JUN-2002; 2002US-0385708P.
PR   10-JUL-2002; 2002US-0394625P.
PR   24-JUL-2002; 2002US-0398008P.
PR   09-AUG-2002; 2002US-0402131P.
PR   13-AUG-2002; 2002US-0402708P.
PR   18-SEP-2002; 2002US-0411355P.
PR   18-SEP-2002; 2002US-0411426P.
PR   02-OCT-2002; 2002US-0414984P.
PR   11-OCT-2002; 2002US-0417611P.
PR   23-OCT-2002; 2002US-0420246P.
PR   05-NOV-2002; 2002US-0423623P.
XX
PA   (HUMA-) HUMAN GENOME SCI INC.
PA   (DELZ ) DELTA BIOTECHNOLOGY LTD.
PA   (PRIN-) PRINCIPIA PHARM CORP.
XX
PI   Ballance DJ,  Turner AJ,  Rosen CA,  Haseltine WA;
XX
DR   WPI; 2003-598517/56.
DR   N-PSDB; ADF15860.
XX
PT   New albumin fusion protein, useful for preparing a composition for
PT   treating diabetes mellitus.
XX
PS   Example 4; SEQ ID NO 593; 24pp; English.
XX
CC   This invention relates to a novel albumin fusion protein having albumin
CC   or biological activity. Human serum albumin is responsible for a
CC   significant proportion of the osmotic pressure of serum and also
CC   functions as a carrier of endogenous and exogenous ligands. The fusion of
CC   albumin to a therapeutic protein may increase shelf-life and stability of
CC   the therapeutic protein. The albumin fusion protein of the invention may
CC   allow production of compositions with antidiabetic activity whilst the
CC   nucleotide sequence which encodes it may be useful for gene therapy. The
CC   albumin fusion protein is useful for preparing a composition for treating
CC   diabetes mellitus. The present sequence is that of a therapeutic protein
CC   which was fused with human albumin to create a novel albumin fusion
CC   protein of the invention. Note: The sequence data for this patent did not
CC   form part of the printed specification, but was obtained in electronic
CC   format directly from WIPO at ftp.wipo.int/pub/publishedpct_sequences
XX
SQ   Sequence 192 AA;

  Query Match             100.0%;  Score 846;  DB 7;  Length 192;
  Best Local Similarity   100.0%;  Pred. No. 2.4e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 50
ADF16587
ID   ADF16587 standard; protein; 192 AA.
XX
AC   ADF16587;
XX
DT   12-FEB-2004  (first entry)
XX
DE   Human albumin fusion protein-related protein SeqID1689.
XX
KW   albumin fusion protein; albumin activity; human serum albumin;
KW   serum osmotic pressure; shelf-life; stability; antidiabetic;
KW   gene therapy; diabetes mellitus; human; gene; ds.
XX
OS   Homo sapiens.
XX
PN   WO2003060071-A2.
XX
PD   24-JUL-2003.
XX
PF   23-DEC-2002; 2002WO-US040891.
XX
PR   21-DEC-2001; 2001US-0341811P.
PR   24-JAN-2002; 2002US-0350358P.
PR   28-JAN-2002; 2002US-0351360P.
PR   26-FEB-2002; 2002US-0359370P.
PR   28-FEB-2002; 2002US-0360000P.
PR   27-MAR-2002; 2002US-0367500P.
PR   08-APR-2002; 2002US-0370227P.
PR   10-MAY-2002; 2002US-0378950P.
PR   24-MAY-2002; 2002US-0382617P.
PR   28-MAY-2002; 2002US-0383123P.
PR   05-JUN-2002; 2002US-0385708P.
PR   10-JUL-2002; 2002US-0394625P.
PR   24-JUL-2002; 2002US-0398008P.
```

PR 09-AUG-2002; 2002US-0402131P.
PR 13-AUG-2002; 2002US-0402708P.
PR 18-SEP-2002; 2002US-0411355P.
PR 18-SEP-2002; 2002US-0411426P.
PR 02-OCT-2002; 2002US-0414984P.
PR 11-OCT-2002; 2002US-0417611P.
PR 23-OCT-2002; 2002US-0420246P.
PR 05-NOV-2002; 2002US-0423623P.
XX
PA (HUMA-) HUMAN GENOME SCI INC.
PA (DELZ) DELTA BIOTECHNOLOGY LTD.
PA (PRIN-) PRINCIPIA PHARM CORP.
XX
PI Ballance DJ, Turner AJ, Rosen CA, Haseltine WA;
XX
DR WPI; 2003-598517/56.
DR N-PSDB; ADF16261.
XX
PT New albumin fusion protein, useful for preparing a composition for
PT treating diabetes mellitus.
XX
PS Example 4; SEQ ID NO 1689; 24pp; English.
XX
CC This invention relates to a novel albumin fusion protein having albumin
CC or biological activity. Human serum albumin is responsible for a
CC significant proportion of the osmotic pressure of serum and also
CC functions as a carrier of endogenous and exogenous ligands. The fusion of
CC albumin to a therapeutic protein may increase shelf-life and stability of
CC the therapeutic protein. The albumin fusion protein of the invention may
CC allow production of compositions with antidiabetic activity whilst the
CC nucleotide sequence which encodes it may be useful for gene therapy. The
CC albumin fusion protein is useful for preparing a composition for treating
CC diabetes mellitus. The present sequence is that of a therapeutic protein
CC which was fused with human albumin to create a novel albumin fusion
CC protein of the invention. Note: The sequence data for this patent did not
CC form part of the printed specification, but was obtained in electronic
CC format directly from WIPO at ftp.wipo.int/pub/publishedpct_sequences
XX
SQ Sequence 192 AA;

Query Match 100.0%; Score 846; DB 7; Length 192;
Best Local Similarity 100.0%; Pred. No. 2.4e-86;
Matches 165; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
Db 28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy 61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
Db 88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy 121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
Db 148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192

RESULT 51
AAP50300
ID AAP50300 standard; protein; 193 AA.
XX
AC AAP50300;
XX
DT 25-MAR-2003 (revised)
DT 01-JAN-1980 (first entry)
XX
DE Human erythropoietin encoded by positve clone (phage lambda-hE1) isolated
DE from human fetal liver gene bank.
XX
KW Erythropoietin; red blood cell; erythrocyte; anaemia; blood; disorder;
KW ss; phage lambda-hE1; gene bank.
XX
OS Homo sapiens.
XX
PN WO8502610-A.
XX
PD 20-JUN-1985.
XX
PF 11-DEC-1984; 84WO-US002021.
XX
PR 13-DEC-1983; 83US-00561024.
PR 21-FEB-1984; 84US-00582185.
PR 28-SEP-1984; 84US-00655841.
PR 30-NOV-1984; 84US-00675298.
XX
PA (KIRI) KIRIN AMGEN INC.
XX
DR WPI; 1985-159229/26.
DR N-PSDB; AAN50347.
XX
PT New polypeptide having properties of erythropoietin - is prepd. by
PT cultivation of transformed eucaryotic or procaryotic host.
XX
PS Disclosure; Page 43; 113pp; English.
XX
CC Human erythropoietin encoded by a sequence encoded by this phage lambda-
CC hE1 is essential for red blood cell formation and is used for the
CC diagnosis and treatment of blood disorders such as anaemia. Large amounts
CC of EPO may be obtained using recombinant DNA techniques in contrast to
CC small amounts obtained from plasma and urine. This sequence is expressed
CC in E. coli. See also AAN50345-6, AAN50348-50 and AAP50298-99, AAP50301.
CC (Updated on 25-MAR-2003 to correct PA field.)
XX
SQ Sequence 193 AA;

Query Match 100.0%; Score 846; DB 1; Length 193;
Best Local Similarity 100.0%; Pred. No. 2.4e-86;
Matches 165; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
Db 28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy 61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
Db 88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy 121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
Db 148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192

RESULT 52
AAP60597
ID AAP60597 standard; protein; 193 AA.
XX
AC AAP60597;
XX
DT 25-MAR-2003 (revised)
DT 01-JAN-1980 (first entry)
XX
DE Clone lambda HEPOFL13 encoding human erthropoietin.
XX
KW Erythropoietin; lamba HEPOFL13; recombinant plasmid vector; anaemia;
KW mammal cell culture; 3T3; CHO; Chinese hamster ovary; ss.
XX
OS Homo sapiens.
XX
PN WO8603520-A.
XX
PD 19-JUN-1986.
XX
PF 03-DEC-1985; 85WO-US002405.
XX
PR 04-DEC-1984; 84US-00677813.
PR 03-JAN-1985; 85US-00688622.

```
PR   22-JAN-1985;   85US-00693258.
XX
PA   (GEMY ) GENETICS INST INC.
PA   (FRIT/) FRITSCHE E.
XX
PI   Fritsch E,  Hewick RM,  Jacobs K;
XX
DR   WPI; 1986-169459/26.
DR   N-PSDB; AAN60513.
XX
PT   Prodn. of human cDNA clone expressing erythropoietin - for mass prodn. of
PT   erythropoietin, useful for treating anaemia.
XX
PS   Disclosure; Page 7; 61pp; English.
XX
CC   A recombinant plasmid vector expressing this clone is expressed in e. g
CC   3T3 or CHO cell cultures. The produced erythropoietin is useful for
CC   treatment of anaemia, especially renal anaemia. The cloned gene expresses
CC   high levels of the protein and thus provides a means of mass production.
CC   See also AAN60514-21 and AAP60598-99. (Updated on 25-MAR-2003 to correct
CC   PA field.)
XX
SQ   Sequence 193 AA;

  Query Match             100.0%;  Score 846;  DB 1;  Length 193;
  Best Local Similarity   100.0%;  Pred. No. 2.4e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 53
AAP70256
ID   AAP70256 standard; protein; 193 AA.
XX
AC   AAP70256;
XX
DT   19-FEB-1991  (first entry)
XX
DE   Sequence of human erythropoietin (EPO).
XX
KW   Renal anaemia therapy; hormone.
XX
OS   Homo sapiens.
XX
FH   Key             Location/Qualifiers
FT   Peptide         1. .27
FT                   /label= SIGNAL
FT   Protein         28. .193
FT   Region          81. .97
FT                   /note= "Fragment that probe AAN70361 is based on"
XX
PN   EP232034-A.
XX
PD   12-AUG-1987.
XX
PF   19-JAN-1987;   87EP-00300399.
XX
PR   23-JAN-1986;   86JP-00012868.
XX
PA   (SUMO ) SUMITOMO CHEM IND KK.
PA   (SUMI-) SUMITOMI SEIYAKU KK.
XX
PI   Yanagi H,  Ogawa I,  Okamoto M,  Hozumi T,  Soga A,  Yoshima T;
PI   Tsutsumi M;
XX
DR   WPI; 1987-223006/32.
DR   N-PSDB; AAN70360, AAN70361.
XX
PT   Human erythropoietin prodn. - by culturing human cells, esp. Namalwa
PT   cells, transformed with DNA encoding human erythorpoletin.
XX
PS   Disclosure; Fig 1; 22pp; English.
XX
CC   A cDNA library was prepd. from the poly (A) RNA, which was isolated from
CC   the erythropoietin-producing human hepatoma cell Hp-1. The cDNA library
CC   was screened using the probes given in AAN70361 and AAN70362. A plasmid
CC   (named as p58-A20) was isolated. The nucleotide sequence of the cDNA
CC   obtained from this clone is shown in AAN70360
XX
SQ   Sequence 193 AA;

  Query Match             100.0%;  Score 846;  DB 1;  Length 193;
  Best Local Similarity   100.0%;  Pred. No. 2.4e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 54
AAR65499
ID   AAR65499 standard; protein; 193 AA.
XX
AC   AAR65499;
XX
DT   25-MAR-2003  (revised)
DT   24-JUN-1995  (first entry)
XX
DE   Human prepro-erythropoietin.
XX
KW   Erythropoietin; therapeutic; ss.
XX
OS   Synthetic.
XX
FH   Key             Location/Qualifiers
FT   Peptide         1. .27
FT                   /note= "leader peptide"
XX
PN   WO9425055-A1.
XX
PD   10-NOV-1994.
XX
PF   29-APR-1994;   94WO-US004755.
XX
PR   29-APR-1993;   93US-00055076.
XX
PA   (ABBO ) ABBOTT LAB.
XX
PI   Okasinski GF,  Devries PJ,  Mellovitz BS,  Meuth JL,  Schaefer VG;
XX
DR   WPI; 1994-357906/44.
DR   N-PSDB; AAQ74760.
XX
PT   Erythropoietin analogues - useful for treatment of anaemia and have
PT   enhanced erythropoietic effect.
XX
```

```
PS   Disclosure; Page 38-39; 56pp; English.
XX
CC   DNA encoding human prepro-erythropoietin may be ligated into an
CC   expression vector for erythropoietin expression in a CHO cell culture.
CC   Site-directed mutagenesis may be used in the construction of EPO
CC   analogues with improved activity, which may be used in pharmaceutical
CC   compositions for inducing erythropoiesis and treating anaemia. (Updated
CC   on 25-MAR-2003 to correct PN field.)
XX
SQ   Sequence 193 AA;

  Query Match            100.0%;  Score 846;  DB 2;  Length 193;
  Best Local Similarity  100.0%;  Pred. No. 2.4e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 55
AAR71137
ID   AAR71137 standard; protein; 193 AA.
XX
AC   AAR71137;
XX
DT   25-MAR-2003  (revised)
DT   17-OCT-1995  (first entry)
XX
DE   Human erythropoietin.
XX
KW   Human erythropoietin; glycosylation; sialic acid; solubility; half-life;
KW   biological activity; proteolysis resistance; anaemia;
KW   chronic renal failure.
XX
OS   Homo sapiens.
XX
FH   Key             Location/Qualifiers
FT   Peptide         1. .27
FT                   /label= sig_peptide
XX
PN   WO9505465-A1.
XX
PD   23-FEB-1995.
XX
PF   16-AUG-1994;   94WO-US009257.
XX
PR   17-AUG-1993;   93US-00108016.
XX
PA   (AMGE-) AMGEN INC.
XX
PI   Elliott SG,  Byrne TE;
XX
DR   WPI; 1995-098764/13.
XX
PT   Erythropoietin (EPO) analogues having additional glycosylation site(s) -
PT   to increase sialic acid content, thereby increasing solubility, serum
PT   half-life, biological activity and resistance to proteolysis.
XX
PS   Disclosure; Page 80-81; 108pp; English.
XX
CC   AAR71137 describes the amino acid sequence of human erythropoietin (EPO),
CC   from which the inventions novel human EPO analogues were derived. The
CC   analogues have at least one additional glycosylation site, this is used
CC   to increase the sialic acid content which in turn increases the
CC   solubility, half-life, biological activity and proteolysis resistance of
CC   the protein. The analogues are useful in claimed compsns. for the
CC   treatment of chronic renal failure associated anaemia. (Updated on 25-MAR
CC   -2003 to correct PN field.)
XX
SQ   Sequence 193 AA;

  Query Match            100.0%;  Score 846;  DB 2;  Length 193;
  Best Local Similarity  100.0%;  Pred. No. 2.4e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 56
AAR74141
ID   AAR74141 standard; protein; 193 AA.
XX
AC   AAR74141;
XX
DT   25-MAR-2003  (revised)
DT   30-OCT-1995  (first entry)
XX
DE   Human erythropoietin.
XX
KW   Erythropoietin; anemia; gene therapy; gene transfer; red blood cell; RBC;
KW   erythrocyte; transformation; myoblast; EPO.
XX
OS   Homo sapiens.
XX
PN   WO9513376-A1.
XX
PD   18-MAY-1995.
XX
PF   09-NOV-1994;   94WO-US013066.
XX
PR   10-NOV-1993;   93US-00149871.
PR   07-OCT-1994;   94US-00320480.
XX
PA   (AMGE-) AMGEN INC.
PA   (UYSC-) UNIV SOUTHERN CALIFORNIA.
XX
PI   Samal BB,  Hamamori Y,  Kedes LH;
XX
DR   WPI; 1995-194095/25.
DR   N-PSDB; AAQ92296.
XX
PT   Gene therapy for treatment of anaemia - and increasing red blood cell
PT   production by transforming red blood cells with the erythropoietin gene.
XX
PS   Disclosure; Page 38-40; 51pp; English.
XX
CC   The amino acid sequence encoded by human EPO cDNA is given in AAR74141.
CC   Transfection of target cells, e.g. myoblasts, with EPO cDNA and
CC   implantation into muscle tissue provides increased RBC prodn. (Updated on
CC   25-MAR-2003 to correct PN field.)
XX
SQ   Sequence 193 AA;

  Query Match            100.0%;  Score 846;  DB 2;  Length 193;
  Best Local Similarity  100.0%;  Pred. No. 2.4e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;
```

```
Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192
```

RESULT 57
AAR81982
ID AAR81982 standard; protein; 193 AA.
XX
AC AAR81982;
XX
DT 25-MAR-2003 (revised)
DT 27-FEB-1996 (first entry)
XX
DE Human erythropoietin.
XX
KW Erythropoietin; sialylation; sialic acid; glycosylation; reticulocyte;
KW red blood cell; erythrocyte; haematocrit.
XX
OS Homo sapiens.
XX
FH Key Location/Qualifiers
FT Peptide 1. .27
FT /label= Sig_peptide
FT Modified-site 51
FT /label= N-glycosylation_site
FT Modified-site 65
FT /label= N-glycosylation_site
FT Modified-site 110
FT /label= N-glycosylation_site
FT Modified-site 153
FT /label= O-glycosylation_site
XX
PN EP668351-A1.
XX
PD 23-AUG-1995.
XX
PF 12-OCT-1990; 95EP-00101849.
XX
PR 13-OCT-1989; 89US-00421444.
PR 09-OCT-1990; 90WO-US005758.
XX
PA (AMGE-) AMGEN INC.
XX
PI Byrne TE, Elliott SG;
XX
DR WPI; 1995-284791/38.
XX
PT New human erythropoietin analogues with increased glycosylation - have
PT increased activity useful for increasing prodn. of reticulocytes and red
PT blood cells.
XX
PS Disclosure; Fig 5; 31pp; English.
XX
CC Human urinary erythropoietin (AAR81982) is a glycoprotein contg. 3 N-
CC linked and 1 O-linked oligosaccharide chain. Erythropoietin analogues
CC (AAR81983-87) have been produced in which the number of glycosylation
CC sites is increased. (Updated on 25-MAR-2003 to correct PF field.)
XX
SQ Sequence 193 AA;

Query Match 100.0%; Score 846; DB 2; Length 193;
Best Local Similarity 100.0%; Pred. No. 2.4e-86;
Matches 165; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```
Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192
```

RESULT 58
AAR98397
ID AAR98397 standard; protein; 193 AA.
XX
AC AAR98397;
XX
DT 15-SEP-1996 (first entry)
XX
DE Human erythropoietin.
XX
KW Erythropoietin; EPO; anaemia; gene therapy; vector;
KW scaffold attachment region; SAR element; transgenic animal.
XX
OS Synthetic.
XX
FH Key Location/Qualifiers
FT Peptide 1. .27
FT /label= Sig_peptide
FT Protein 28. .193
FT /label= Mat_protein
XX
PN WO9619573-A1.
XX
PD 27-JUN-1996.
XX
PF 18-DEC-1995; 95WO-CA000696.
XX
PR 19-DEC-1994; 94US-00358918.
XX
PA (CANG-) CANGENE CORP.
XX
PI Delcuve G;
XX
DR WPI; 1996-309587/31.
DR N-PSDB; AAT31529, AAT31532.
XX
PT Recombinant DNA molecule expressing mammalian erythropoietin - useful to
PT transform cell lines, and for gene therapy, e.g. of anaemia's and other
PT red blood cell disorders.
XX
PS Claim 3; Page 58; 84pp; English.
XX
CC Human erythropoietin (EPO) (AAR98397) functions to promote erythroid
CC development, to initiate haemoglobin biosynthesis and to stimulate
CC proliferation of ommature erythroid precursors. It can be obtd. by
CC stable, long-term expression in mammalian cell hosts transfected with a
CC vector carrying EPO cDNA (AAT31529) or genomic DNA (AAT31532) operably
CC linked to an expression control sequence and to 5' and 3' human
CC apolipoprotein scaffold attachment region (SAR) elements (see also
CC AAT31530-31). Transgenic animals can be produced that express the
CC recombinant EPO in their milk
XX
SQ Sequence 193 AA;

Query Match 100.0%; Score 846; DB 2; Length 193;
Best Local Similarity 100.0%; Pred. No. 2.4e-86;
Matches 165; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```
Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
```

```
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 59
AAY43398
ID   AAY43398 standard; protein; 193 AA.
XX
AC   AAY43398;
XX
DT   28-JAN-2000  (first entry)
XX
DE   Human erythropoietin protein sequence.
XX
KW   SAR element; scaffold attachment region; human; apolipoprotein B; tPA;
KW   tissue plasminogen activator; protein expression; gene therapy; lysis;
KW   occlusive coronary artery thrombi; transmural myocardial infarction;
KW   ventricular function; congestive heart failure; acute ischaemic stroke;
KW   acute massive pulmonary embolism; venous thrombosis; arterial thrombosis;
KW   embolism; arteriovenous cannulae occlusion; plasminogen activator;
KW   intravenous catheter clearance; blood clot; erythropoietin.
XX
OS   Homo sapiens.
XX
PN   US5985607-A.
XX
PD   16-NOV-1999.
XX
PF   27-JUN-1997;   97US-00883795.
XX
PR   19-DEC-1994;   94US-00358918.
XX
PA   (CANG-) CANGENE CORP.
XX
PI   Awang G,  Delcuve G;
XX
DR   WPI; 2000-012788/01.
DR   N-PSDB; AAZ37201.
XX
PT   Recombinant DNA molecules encoding tissue plasminogen activator proteins,
PT   operatively linked to a scaffold attachment region, useful for the
PT   production of tissue plasminogen activator both in vivo and in vitro.
XX
PS   Example 2; Fig 3; 49pp; English.
XX
CC   This sequence represents the human erythropoietin protein. The invention
CC   relates to a recombinant DNA molecule adapted for expression of tissue
CC   plasminogen activator (tPA). The DNA molecule comprise a sequence
CC   encoding tPA, an expression control sequence operatively linked to the
CC   tPA sequence, and at least one human apolipoprotein B scaffold attachment
CC   region (SAR) element (the SAR is not a 5' proximal apolipoprotein B SAR).
CC   The SAR element is used to increase the expression of the coding
CC   sequences. The recombinant nucleic acids may be used for the recombinant
CC   production of tPA both in vitro or in vivo (e.g. as part of a gene
CC   therapy procedure). TPA may be administered to treat and remove blood
CC   clots. It is especially useful for the lysis of occlusive coronary artery
CC   thrombi associated with evolving transmural myocardial infarction to
CC   improve ventricular function and reduce the risk of congestive heart
CC   failure. Additionally, it may be used in the management of acute massive
CC   pulmonary embolism, venous thrombosis and acute ischaemic stroke.
CC   Finally, tPA may be used in treating arterial thrombosis or embolism,
CC   arteriovenous cannulae occlusion and intravenous catheter clearance. In
CC   contrast to other plasminogen activators (e.g. urokinase and
CC   streptokinase), the activity of TPA is relatively localised and (in
CC   theory) is less likely to produce systemic haemorrhagic disorders
XX
SQ   Sequence 193 AA;

  Query Match             100.0%;  Score 846;  DB 3;  Length 193;
  Best Local Similarity   100.0%;  Pred. No. 2.4e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 60
AAY94530
ID   AAY94530 standard; protein; 193 AA.
XX
AC   AAY94530;
XX
DT   28-NOV-2000  (first entry)
XX
DE   Human erythropoietin protein.
XX
KW   Human; erythropoietin; Epo; glycosylation; anaemia;
KW   chronic renal failure; myelosuppressive therapy; cancer; viral infection;
KW   HIV; blood loss.
XX
OS   Homo sapiens.
XX
FH   Key             Location/Qualifiers
FT   Peptide         1. .27
FT                   /label= Signal
FT   Protein         28. .193
FT                   /label= Erythropoietin
XX
PN   WO200024893-A2.
XX
PD   04-MAY-2000.
XX
PF   18-OCT-1999;   99WO-US024435.
XX
PR   23-OCT-1998;   98US-00178292.
XX
PA   (AMGE-) AMGEN INC.
XX
PI   Egrie JC,  Elliott SG,  Brown JK;
XX
DR   WPI; 2000-350735/30.
XX
PT   Raising and maintaining hematocrit in a mammal by administering an
PT   effective amount of a hyperglycosylated analog of erythropoietin, useful
PT   for treating anemia associated with myelosuppressive therapy or excessive
PT   blood loss.
XX
PS   Disclosure; Fig 1; 63pp; English.
XX
CC   The present sequence is human erythropoietin (Epo). Epo is a glycoprotein
CC   hormone necessary for the maturation of erythroid progenitor cells into
CC   erythrocytes. It has been discovered that hyperglycosylated Epo has a
CC   longer half-life and greater in vivo activity than recombinant human Epo.
CC   Several hyperglycosylated Epo mutants (AAY94531 to AAY94544) have been
CC   made by in vitro mutagenesis. Hyperglycosylated Epo analogs are useful as
CC   they may be used instead of recombinant Epo to increase and maintain the
CC   level of red blood cells in mammals. The Epo analogs may be used to treat
CC   or prevent anaemia associated with chronic renal failure,
CC   myelosuppressive therapy, certain cancers, viral disease such as HIV and
CC   excessive blood loss
```

```
XX
SQ   Sequence 193 AA;

  Query Match             100.0%;  Score 846;  DB 3;  Length 193;
  Best Local Similarity   100.0%;  Pred. No. 2.4e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 61
AAY93638
ID   AAY93638 standard; protein; 193 AA.
XX
AC   AAY93638;
XX
DT   25-SEP-2000  (first entry)
XX
DE   Amino acid sequence of a human erythropoietin polypeptide.
XX
KW   Human; erythropoietin; EPO; inhibitor; nuclear factor-kappaB; NF-kappaB;
KW   multi-drug resistance gene; malignant hemopathy; solid tumour;
KW   malignant blood disease; leukaemia; lymphoma; solid cancer.
XX
OS   Homo sapiens.
XX
PN   WO200030587-A2.
XX
PD   02-JUN-2000.
XX
PF   24-NOV-1999;   99WO-FR002897.
XX
PR   25-NOV-1998;   98FR-00014858.
XX
PA   (CNRS ) CENT NAT RECH SCI.
XX
PI   Hirsch F,  Haeffner A;
XX
DR   WPI; 2000-399901/34.
DR   N-PSDB; AAA46697.
XX
PT   Treatment of hematological or solid tumors using an inhibitor of the
PT   activation of nuclear factor-kappaB, particularly to prevent development
PT   of resistance to chemotherapeutics.
XX
PS   Claim 11; Page 30; 30pp; French.
XX
CC   The present sequence represents a human erythropoietin (EPO) polypeptide.
CC   The human growth hormone protein is used as an inhibitor of the
CC   activation of nuclear factor-kappaB (NF-kappaB). The inhibitor inhibits
CC   activation of NF-kappaB, and thus transcription of the multi-drug
CC   resistance gene (which contains binding sites for NF-kappaB within its
CC   regulatory regions). The inhibitors are used to produce pharmaceuticals
CC   which may be used in the treatment of malignant hemopathy or solid
CC   tumours. The inhibitors are especially used to treat malignant blood
CC   diseases (leukaemia, lymphoma) and solid cancers (of breast or ovary)
XX
SQ   Sequence 193 AA;

  Query Match             100.0%;  Score 846;  DB 3;  Length 193;
  Best Local Similarity   100.0%;  Pred. No. 2.4e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 62
AAY99704
ID   AAY99704 standard; protein; 193 AA.
XX
AC   AAY99704;
XX
DT   15-SEP-2000  (first entry)
XX
DE   Human non-glycosylated erythroprotein NGE.
XX
KW   Human; non-glycosylated erythroprotein; NGE; haematocrit; antianaemic;
KW   anaemia; erythropoiesis promoter.
XX
OS   Homo sapiens.
XX
PN   WO200032772-A2.
XX
PD   08-JUN-2000.
XX
PF   23-NOV-1999;   99WO-US027801.
XX
PR   30-NOV-1998;   98US-0110289P.
XX
PA   (ELIL ) LILLY & CO ELI.
XX
PI   Beals JM,  Glaesner W,  Micanovic R,  Millican RL,  Witcher DR;
XX
DR   WPI; 2000-412320/35.
XX
PT   Non-glycosylated erythropoietic compound useful for increasing hematocrit
PT   level in mammal with insufficient hematocrit levels in conditions such as
PT   anemia, comprises protein covalently bonded to polymer.
XX
PS   Claim 1; Page 91-92; 94pp; English.
XX
CC   The present sequence is the non-glycosylated erythroprotein NGE. The
CC   protein promotes erythropoiesis and can therefore be used to increase
CC   haematocrit levels in mammals with conditions such as anaemia, in which
CC   levels of haematocrit are insufficient. Mutants derived from the present
CC   protein can also be used to treat such conditions. The analogues,
CC   designated NGEAs, do not themselves cause a significant increase in
CC   haematocrit but they acquire that property once they are derivatised with
CC   polyethylene glycol polymers. The analogues can be produced using a
CC   linkerless aldehyde modification process. They show stability and
CC   bioactivity in vivo. The compounds can be produced by recombinant DNA
CC   technology or by chemical procedures such as solution or solid-phase
CC   peptide synthesis
XX
SQ   Sequence 193 AA;

  Query Match             100.0%;  Score 846;  DB 3;  Length 193;
  Best Local Similarity   100.0%;  Pred. No. 2.4e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
```

```
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 63
AAB34978
ID   AAB34978 standard; protein; 193 AA.
XX
AC   AAB34978;
XX
DT   27-MAR-2001  (first entry)
XX
DE   Human erythropoietin SEQ ID NO: 4.
XX
KW   Chimpanzee; erythropoietin; EPO; hybridisation probe; gene therapy;
KW   mapping; therapeutic agent.
XX
OS   Homo sapiens.
XX
PN   WO200068376-A1.
XX
PD   16-NOV-2000.
XX
PF   05-MAY-2000; 2000WO-US012370.
XX
PR   07-MAY-1999;   99US-00307307.
PR   28-MAR-2000; 2000US-0287594P.
PR   19-APR-2000; 2000US-00552265.
XX
PA   (GETH ) GENENTECH INC.
XX
PI   Desauvage F,  Henner DJ;
XX
DR   WPI; 2001-007393/01.
XX
PT   Nucleic acids encoding chimpanzee erythropoietin, useful for treatment of
PT   e.g. anemia, also derived proteins, antibodies and modulators.
XX
PS   Disclosure; Fig 3; 109pp; English.
XX
CC   The present invention provides the coding and protein sequences of
CC   chimpanzee erythropoietin (EPO). These sequences can be used in gene
CC   therapy, to block the activity of EPO, as hybridisation probes, in
CC   genetic and chromosome mapping and as therapeutic agents
XX
SQ   Sequence 193 AA;

  Query Match             100.0%;  Score 846;  DB 4;  Length 193;
  Best Local Similarity   100.0%;  Pred. No. 2.4e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 64
AAB85573
ID   AAB85573 standard; protein; 193 AA.
XX
AC   AAB85573;
XX
DT   29-OCT-2001  (first entry)
XX
DE   Human erythropoietin (EPO) sequence.
XX
KW   Transgenic; pig; human; erythropoietin; EPO; milk; PMSG; hCG;
KW   chorionic gonadotrophic hormone; WAP promoter.
XX
OS   Homo sapiens.
XX
FH   Key             Location/Qualifiers
FT   Peptide         1. .27
FT                   /note= "signal peptide"
FT   Protein         28. .193
FT                   /note= "mature protein"
XX
PN   WO200159074-A1.
XX
PD   16-AUG-2001.
XX
PF   28-JUN-2000; 2000WO-KR000675.
XX
PR   14-FEB-2000; 2000KR-00006888.
XX
PA   (KORE-) REPUBLIC KOREA.
XX
PI   Chang W,  Park J,  Seong H,  Min K,  Yang B,  Im G,  Lee Y,  Lee C;
PI   Kim J;
XX
DR   WPI; 2001-514656/56.
DR   N-PSDB; AAH46972.
XX
PT   Producing transgenic porcine that secretes human erythropoietin (hEPO) in
PT   milk, by introducing vector comprising hEPO genome into fertilized eggs
PT   of porcine to which PMSG and hCG were administered, and developing
PT   progeny.
XX
PS   Claim 4; Fig 3; 21pp; English.
XX
CC   The invention relates to producing transgenic pigs (P) that secrete human
CC   erythropoietin (hEPO) in milk. The method involves administering PMSG and
CC   human chorionic gonadotrophic hormone (hCG) into (P), collecting
CC   fertilized eggs after mating, injecting expression vector containing a
CC   2.6 kb WAP promoter, hEPO genome and SV40 poly A DNA into male pronuclei,
CC   transplanting them in surrogate mother pig and allowing it to give birth.
CC   The method provides transgenic porcine capable of secreting hEPO in their
CC   milk, thus producing the expensive useful medicine at a low cost with
CC   stability on a large scale, giving a contribution to the improvement of
CC   human health. The present sequence represents a human EPO sequence
CC   incorporated into the genome of porcine
XX
SQ   Sequence 193 AA;

  Query Match             100.0%;  Score 846;  DB 4;  Length 193;
  Best Local Similarity   100.0%;  Pred. No. 2.4e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 65
AAE15341
ID   AAE15341 standard; protein; 193 AA.
XX
```

```
AC   AAE15341;
XX
DT   09-APR-2002  (first entry)
XX
DE   Human erythropoietin (Epo) protein.
XX
KW   Human; erythropoietin; Epo; haematocrit; anaemia; kidney function;
KW   cancer; myelosuppressive therapy; anti-viral drug.
XX
OS   Homo sapiens.
XX
FH   Key             Location/Qualifiers
FT   Peptide         1. .27
FT                   /label= Signal_peptide
FT   Protein         28. .193
FT                   /label= Mature_Epo_protein
XX
PN   WO200181405-A2.
XX
PD   01-NOV-2001.
XX
PF   19-APR-2001; 2001WO-US012836.
XX
PR   21-APR-2000; 2000US-00559001.
XX
PA   (AMGE-) AMGEN INC.
XX
PI   Egrie JC,  Elliott SG,  Browne JK,  Sitney KC;
XX
DR   WPI; 2002-034433/04.
XX
PT   Increasing and maintaining hematocrit in mammal suffering from anemia,
PT   comprising administering hyperglycosylated analog of erythropoietin less
PT   frequently and at lower molar amount of recombinant human erythropoietin.
XX
PS   Example 1; Fig 1; 95pp; English.
XX
CC   The invention relates to a method for increasing and maintaining
CC   haematocrit in a mammal. The method comprises administering a
CC   hyperglycosylated analogue of erythropoietin (Epo) in a pharmaceutical
CC   composition, less frequently than an equivalent molar amount of and at a
CC   lower molar amount than recombinant human Epo (rHuEpo) to obtain a
CC   comparable target haematocrit. Epo is a glycoprotein hormone necessary
CC   for the maturation of erythroid progenitor cells into erythrocytes. Human
CC   Epo analogue is useful for raising and maintaining haematocrit to a
CC   comparable target haematocrit in a mammal suffering from anaemia
CC   associated with a decline or loss of kidney function, myelosuppressive
CC   therapy comprising chemotherapeutic or anti-viral drugs or associated
CC   with excessive blood loss during surgical procedures, and in cancer
CC   condition. The present sequence is human Epo protein
XX
SQ   Sequence 193 AA;

  Query Match             100.0%;  Score 846;  DB 5;  Length 193;
  Best Local Similarity   100.0%;  Pred. No. 2.4e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 66
AAE32131
ID   AAE32131 standard; protein; 193 AA.
XX
AC   AAE32131;
XX
DT   24-MAR-2003  (first entry)
XX
DE   Human erythropoietin protein.
XX
KW   Human; erythropoietin; single nucleotide polymorphism; psoriasis; SNP;
KW   acquired immune deficiency syndrome; venereal disease; carcinoma; EPO;
KW   autoimmune disease; gastrointestinal disorder; cardiovascular disease;
KW   Kaposi's sarcoma; ulcerative colitis; central nervous system disease;
KW   renal insufficiency; inflammatory process; radiotherapy; chemotherapy;
KW   metabolic disease; Alzheimer's disease; Parkinson's disease; melanoma;
KW   schizophrenia; Crohn's disease; rheumatoid arthritis; cancer; obesity;
KW   tumour; depression; lymphoma; leukaemia; infection; pneumonia; asthma;
KW   genital wart; allergy; multiple myeloma; anaemia; therapy; AIDS.
XX
OS   Homo sapiens.
XX
FH   Key             Location/Qualifiers
FT   Misc-difference 70
FT                   /note= "This residue changes to Asn due to single
FT                   nucleotide polymorphism (SNP)"
FT   Misc-difference 104
FT                   /note= "This residue changes to Ser due to single
FT                   nucleotide polymorphism (SNP)"
FT   Misc-difference 147
FT                   /note= "This residue changes to Cys due to single
FT                   nucleotide polymorphism (SNP)"
XX
PN   WO200285940-A2.
XX
PD   31-OCT-2002.
XX
PF   29-MAR-2002; 2002WO-EP004331.
XX
PR   04-APR-2001; 2001FR-00004603.
PR   21-DEC-2001; 2001US-0343163P.
PR   04-JAN-2002; 2002US-0345440P.
PR   21-FEB-2002; 2002US-0358598P.
XX
PA   (GENO-) GENODYSSEE.
XX
PI   Escary J;
XX
DR   WPI; 2003-093099/08.
DR   N-PSDB; AAD49618.
XX
PT   Novel polypeptide encoded by nucleotide sequence derived from human
PT   erythropoietin gene with single nucleotide polymorphisms, for diagnosing,
PT   preventing and treating cancers, infections and autoimmune diseases.
XX
PS   Claim 13; Page 72-73; 76pp; English.
XX
CC   The invention relates to polypeptides encoded by nucleotide sequences
CC   derived from human erythropoietin gene (EPO) with single nucleotide
CC   polymorphisms. Sequences of the invention are useful for preventing or
CC   treating diseases such as cancers and tumours which include melanomas,
CC   metastasising renal carcinomas, lymphomas such as follicular lymphomas
CC   and cutaneous T cell lymphoma, leukaemias including chronic lymphocytic
CC   leukaemia and chronic myeloid leukaemia, cancers of the liver, neck, head
CC   and kidneys, multiple myelomas, carcinoid tumours and tumours that appear
CC   following an immune deficiency comprising Kaposi's sarcoma in the case of
CC   AIDS; infectious diseases such as viral infections including chronic
CC   hepatitis B and C and human immunodeficiency virus (HIV)/acquired immune
CC   deficiency syndrome (AIDS) and infectious pneumonias; venereal diseases
CC   such as genital warts; immunologically related diseases and/or autoimmune
CC   diseases and disorders which include rejection of tissue or organ grafts,
CC   allergies, asthma, psoriasis, rheumatoid arthritis, multiple sclerosis,
CC   Crohn's disease and ulcerative colitis; cardiovascular diseases such as
CC   brain injury and anaemias including anaemia in patients under dialysis in
CC   renal insufficiency, as well as anaemia resulting from chronic
CC   infections, inflammatory processes, radiotherapies and chemotherapies;
```

```
CC   metabolic diseases such as non-immune associated diseases such as
CC   obesity, central nervous system diseases including Alzheimer's disease,
CC   Parkinson's disease, schizophrenia and depression. gastrointestinal
CC   disorders and disorders connected with chemotherapy treatments. The
CC   present sequence is human EPO protein
XX
SQ   Sequence 193 AA;

  Query Match           100.0%;  Score 846;  DB 6;  Length 193;
  Best Local Similarity  100.0%;  Pred. No. 2.4e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 67
ADF93283
ID   ADF93283 standard; protein; 193 AA.
XX
AC   ADF93283;
XX
DT   26-FEB-2004  (first entry)
XX
DE   Human EPO protein, SEQ ID 17.
XX
KW   BLG; bovine; lactoglobulin; human; EPO; transgenic animal.
XX
OS   Homo sapiens.
XX
PN   WO2003097818-A1.
XX
PD   27-NOV-2003.
XX
PF   21-OCT-2002; 2002WO-CN000736.
XX
PR   20-MAY-2002; 2002CN-00111745.
XX
PA   (SHAN-) SHANGHAI GENON BIOENGINEERING CO LTD.
XX
PI   Cheng G,  Chen J,  Wu G,  Zhao J;
XX
DR   WPI; 2004-012532/01.
XX
PT   Production of transgenic animals with mammary glands secreting human
PT   erythropoietin (EPO) after constructing fusion gene for microinjection
PT   into pronucleus of fertilized eggs, for use e.g. in treating renal
PT   anemia.
XX
PS   Example 1; SEQ ID NO 17; 29pp; Chinese.
XX
CC   The present invention relates to a fusion gene expressing specifically in
CC   mammary glands comprising elements from 5' to 3' containing 5' flanking
CC   sequence of BLG (bovine lactoglobulin) and human EPO gene and 3' flanking
CC   sequence of BLG. The fusion gene can be used for producing transgenic
CC   animals for producing human EPO. The present sequence was used to
CC   illustrate the invention.
XX
SQ   Sequence 193 AA;

  Query Match           100.0%;  Score 846;  DB 8;  Length 193;
  Best Local Similarity  100.0%;  Pred. No. 2.4e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 68
ADH44002
ID   ADH44002 standard; protein; 193 AA.
XX
AC   ADH44002;
XX
DT   25-MAR-2004  (first entry)
XX
DE   Mutant human erythropoietin SEQ ID NO:112.
XX
KW   erythropoietin; tissue protective cytokine; haematocrit;
KW   vasoactive action; hyperactivating platelet; pro-coagulant activity;
KW   thrombocyte production; vulnerary; neuroprotective; nootropic;
KW   ophthalmological; cardiovascular; respiratory; nephrotropic; uropathic;
KW   gynaecological; gastrointestinal; endocrine; gene therapy; tissue injury;
KW   human; mutant; mutein.
XX
OS   Synthetic.
OS   Homo sapiens.
XX
PN   WO2004003176-A2.
XX
PD   08-JAN-2004.
XX
PF   01-JUL-2003; 2003WO-US020964.
XX
PR   01-JUL-2002; 2002US-0392455P.
PR   03-JUL-2002; 2002US-0393423P.
XX
PA   (WARR-) WARREN INST INC KENNETH S.
PA   (LUND ) LUNDBECK AS H.
XX
PI   Nielsen J,  Pedersen JT,  Gerwien J,  Bay K,  Pedersen LO,  Leist M;
PI   Geist MA,  Kallunki P,  Christensen S,  Sager T,  Brines M,  Cerami A;
PI   Cerami C;
XX
DR   WPI; 2004-071985/07.
XX
PT   New mutein recombinant tissue protective cytokines and encoding nucleic
PT   acid molecules, useful for protecting, restoring or enhancing the
PT   viability of responsive cells, tissues or organs in mammals, including
PT   humans.
XX
PS   Claim 6; SEQ ID NO 112; 323pp; English.
XX
CC   The invention relates to a novel mutein recombinant tissue protective
CC   cytokine lacking at least one activity selected from increasing
CC   haematocrit, vasoactive action, hyperactivating platelets, pro-coagulant
CC   activities and increasing production of thrombocytes. A mutein of the
CC   invention has vulnerary, neuroprotective, nootropic, ophthalmological,
CC   cardiovascular, respiratory, nephrotropic, uropathic, gynaecological,
CC   gastrointestinal, and endocrine activity. A polynucleotide encoding a
CC   cytokine of the invention may have a use in gene therapy. The recombinant
CC   tissue protective cytokine is useful for preparing a pharmaceutical
CC   composition for the protection against and prevention of a tissue injury
CC   as well as the restoration of and rejuvenation of tissue and tissue
CC   function in a mammal, where the injury is caused by a seizure disorder,
CC   multiple sclerosis, stroke, hypotension, cardiac arrest, ischaemia,
CC   myocardial infarction, inflammation, age-related loss of cognitive
CC   function, radiation damage, cerebral palsy, neurodegenerative disease,
```

CC Alzheimer's disease, Parkinson's disease, Leigh disease, AIDS dementia,
CC memory loss, amyotrophic lateral sclerosis, alcoholism, mood disorder,
CC anxiety disorder, attention deficit disorder, autism, Creutzfeld-Jakob
CC disease, brain or spinal cord trauma or ischaemia, heart-lung bypass,
CC chronic heart failure, macular degeneration, diabetic neuropathy,
CC diabetic retinopathy, glaucoma, retinal ischaemia, or retinal trauma. The
CC composition and methods may be used for preventing or treating
CC neurological disorders, ophthalmic diseases, cardiovascular diseases,
CC cardiopulmonary diseases, respiratory diseases, kidney, urinary and
CC reproductive diseases, gastrointestinal diseases or endocrine and
CC metabolic abnormalities. The present sequence is used in the
CC exemplification of the invention.
XX
SQ Sequence 193 AA;

Query Match 100.0%; Score 846; DB 8; Length 193;
Best Local Similarity 100.0%; Pred. No. 2.4e-86;
Matches 165; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
Db 28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy 61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
Db 88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy 121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
Db 148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192

RESULT 69
ADH43900
ID ADH43900 standard; protein; 193 AA.
XX
AC ADH43900;
XX
DT 25-MAR-2004 (first entry)
XX
DE Human erythropoietin SEQ ID NO:10.
XX
KW erythropoietin; human; tissue protective cytokine; haematocrit;
KW vasoactive action; hyperactivating platelet; pro-coagulant activity;
KW thrombocyte production; vulnerary; neuroprotective; nootropic;
KW ophthalmological; cardiovascular; respiratory; nephrotropic; uropathic;
KW gynaecological; gastrointestinal; endocrine; gene therapy; tissue injury.
XX
OS Homo sapiens.
XX
PN WO2004003176-A2.
XX
PD 08-JAN-2004.
XX
PF 01-JUL-2003; 2003WO-US020964.
XX
PR 01-JUL-2002; 2002US-0392455P.
PR 03-JUL-2002; 2002US-0393423P.
XX
PA (WARR-) WARREN INST INC KENNETH S.
PA (LUND) LUNDBECK AS H.
XX
PI Nielsen J, Pedersen JT, Gerwien J, Bay K, Pedersen LO, Leist M;
PI Geist MA, Kallunki P, Christensen S, Sager T, Brines M, Cerami A;
PI Cerami C;
XX
DR WPI; 2004-071985/07.
XX
PT New mutein recombinant tissue protective cytokines and encoding nucleic
PT acid molecules, useful for protecting, restoring or enhancing the
PT viability of responsive cells, tissues or organs in mammals, including
PT humans.
XX
PS Claim 5; SEQ ID NO 10; 323pp; English.
XX
CC The invention relates to a novel mutein recombinant tissue protective
CC cytokine lacking at least one activity selected from increasing
CC haematocrit, vasoactive action, hyperactivating platelets, pro-coagulant
CC activities and increasing production of thrombocytes. A mutein of the
CC invention has vulnerary, neuroprotective, nootropic, ophthalmological,
CC cardiovascular, respiratory, nephrotropic, uropathic, gynaecological,
CC gastrointestinal, and endocrine activity. A polynucleotide encoding a
CC cytokine of the invention may have a use in gene therapy. The recombinant
CC tissue protective cytokine is useful for preparing a pharmaceutical
CC composition for the protection against and prevention of a tissue injury
CC as well as the restoration of and rejuvenation of tissue and tissue
CC function in a mammal, where the injury is caused by a seizure disorder,
CC multiple sclerosis, stroke, hypotension, cardiac arrest, ischaemia,
CC myocardial infarction, inflammation, age-related loss of cognitive
CC function, radiation damage, cerebral palsy, neurodegenerative disease,
CC Alzheimer's disease, Parkinson's disease, Leigh disease, AIDS dementia,
CC memory loss, amyotrophic lateral sclerosis, alcoholism, mood disorder,
CC anxiety disorder, attention deficit disorder, autism, Creutzfeld-Jakob
CC disease, brain or spinal cord trauma or ischaemia, heart-lung bypass,
CC chronic heart failure, macular degeneration, diabetic neuropathy,
CC diabetic retinopathy, glaucoma, retinal ischaemia, or retinal trauma. The
CC composition and methods may be used for preventing or treating
CC neurological disorders, ophthalmic diseases, cardiovascular diseases,
CC cardiopulmonary diseases, respiratory diseases, kidney, urinary and
CC reproductive diseases, gastrointestinal diseases or endocrine and
CC metabolic abnormalities. The present sequence is used in the
CC exemplification of the invention.
XX
SQ Sequence 193 AA;

Query Match 100.0%; Score 846; DB 8; Length 193;
Best Local Similarity 100.0%; Pred. No. 2.4e-86;
Matches 165; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
Db 28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy 61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
Db 88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy 121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
Db 148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192

RESULT 70
ADH43912
ID ADH43912 standard; protein; 193 AA.
XX
AC ADH43912;
XX
DT 25-MAR-2004 (first entry)
XX
DE Mutant human erythropoietin SEQ ID NO:22.
XX
KW erythropoietin; tissue protective cytokine; haematocrit;
KW vasoactive action; hyperactivating platelet; pro-coagulant activity;
KW thrombocyte production; vulnerary; neuroprotective; nootropic;
KW ophthalmological; cardiovascular; respiratory; nephrotropic; uropathic;
KW gynaecological; gastrointestinal; endocrine; gene therapy; tissue injury;
KW human; mutant; mutein.
XX
OS Synthetic.
OS Homo sapiens.
XX
PN WO2004003176-A2.
XX
PD 08-JAN-2004.
XX

```
PF   01-JUL-2003; 2003WO-US020964.
XX
PR   01-JUL-2002; 2002US-0392455P.
PR   03-JUL-2002; 2002US-0393423P.
XX
PA   (WARR-) WARREN INST INC KENNETH S.
PA   (LUND ) LUNDBECK AS H.
XX
PI   Nielsen J,  Pedersen JT,  Gerwien J,  Bay K,  Pedersen LO,  Leist M;
PI   Geist MA,  Kallunki P,  Christensen S,  Sager T,  Brines M,  Cerami A;
PI   Cerami C;
XX
DR   WPI; 2004-071985/07.
XX
PT   New mutein recombinant tissue protective cytokines and encoding nucleic
PT   acid molecules, useful for protecting, restoring or enhancing the
PT   viability of responsive cells, tissues or organs in mammals, including
PT   humans.
XX
PS   Claim 4; SEQ ID NO 22; 323pp; English.
XX
CC   The invention relates to a novel mutein recombinant tissue protective
CC   cytokine lacking at least one activity selected from increasing
CC   haematocrit, vasoactive action, hyperactivating platelets, pro-coagulant
CC   activities and increasing production of thrombocytes. A mutein of the
CC   invention has vulnerary, neuroprotective, nootropic, ophthalmological,
CC   cardiovascular, respiratory, nephrotropic, uropathic, gynaecological,
CC   gastrointestinal, and endocrine activity. A polynucleotide encoding a
CC   cytokine of the invention may have a use in gene therapy. The recombinant
CC   tissue protective cytokine is useful for preparing a pharmaceutical
CC   composition for the protection against and prevention of a tissue injury
CC   as well as the restoration of and rejuvenation of tissue and tissue
CC   function in a mammal, where the injury is caused by a seizure disorder,
CC   multiple sclerosis, stroke, hypotension, cardiac arrest, ischaemia,
CC   myocardial infarction, inflammation, age-related loss of cognitive
CC   function, radiation damage, cerebral palsy, neurodegenerative disease,
CC   Alzheimer's disease, Parkinson's disease, Leigh disease, AIDS dementia,
CC   memory loss, amyotrophic lateral sclerosis, alcoholism, mood disorder,
CC   anxiety disorder, attention deficit disorder, autism, Creutzfeld-Jakob
CC   disease, brain or spinal cord trauma or ischaemia, heart-lung bypass,
CC   chronic heart failure, macular degeneration, diabetic neuropathy,
CC   diabetic retinopathy, glaucoma, retinal ischaemia, or retinal trauma. The
CC   composition and methods may be used for preventing or treating
CC   neurological disorders, ophthalmic diseases, cardiovascular diseases,
CC   cardiopulmonary diseases, respiratory diseases, kidney, urinary and
CC   reproductive diseases, gastrointestinal diseases or endocrine and
CC   metabolic abnormalities. The present sequence is used in the
CC   exemplification of the invention.
XX
SQ   Sequence 193 AA;

  Query Match             100.0%;  Score 846;  DB 8;  Length 193;
  Best Local Similarity   100.0%;  Pred. No. 2.4e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 71
ADH78700
ID   ADH78700 standard; peptide; 193 AA.
XX
AC   ADH78700;
XX
DT   15-APR-2004  (first entry)
XX
DE   Human erythropoietin protein, SEQ ID No 108.
XX
KW   T-cell epitope; cytokine; receptor; CD4+; CD8+; immunogenicity;
KW   interferon-beta; tumour necrosis factor receptor-1; erythropoietin;
KW   thrombopoietin; inflammation; cancer; anaemia; human erythropoietin.
XX
OS   Homo sapiens.
XX
PN   WO2003104263-A2.
XX
PD   18-DEC-2003.
XX
PF   26-FEB-2003; 2003WO-US005917.
XX
PR   01-MAY-2002; 2002US-0376743P.
XX
PA   (GEMV ) GENENCOR INT INC.
XX
PI   Harding FA,  Power SD;
XX
DR   WPI; 2004-062306/06.
XX
PT   Determining T-cell epitope of a protein (e.g. cytokine or cytokine
PT   receptor), useful for reducing protein allergenicity, comprises combining
PT   differentiated dendritic cells and naive T-cells with a peptide having
PT   the T-cell epitope.
XX
PS   Claim 4; SEQ ID NO 108; 51pp; English.
XX
CC   The invention relates to a novel method for determining a T-cell epitope
CC   of a protein, where the protein is selected from cytokines and cytokine
CC   receptors. The method comprises combining a solution of differentiated
CC   dendritic cells and naive CD4+ and/or CD8+ T-cells with a pepset of
CC   peptides comprising the T-cell epitope. The composition and methods are
CC   useful in reducing the immunogenicity of cytokines and cytokine receptors
CC   such as interferon-beta, soluble tumour necrosis factor receptor-1,
CC   erythropoietin or thrombopoietin. These modified cytokines and cytokine
CC   receptors may be used for treating various conditions such as
CC   inflammation, cancer or anaemia. This sequence represents the human
CC   erythropoietin protein of the invention.
XX
SQ   Sequence 193 AA;

  Query Match             100.0%;  Score 846;  DB 8;  Length 193;
  Best Local Similarity   100.0%;  Pred. No. 2.4e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 72
ADL06801
ID   ADL06801 standard; protein; 193 AA.
XX
AC   ADL06801;
XX
DT   03-JUN-2004  (first entry)
XX
DE   Human 165 residue erythropoietin analogue #20.
XX
```

KW Human; erythropoietin; EPO; iron distribution disturbance; diabetes;
KW non-insulin dependent diabetes; type 2 diabetes; reticulocyte production;
KW red blood cell production; glycosylation site; analogue; antidiabetic;
KW mutant; mutein.
XX
OS Homo sapiens.
OS Synthetic.
XX
PN WO2004019972-A1.
XX
PD 11-MAR-2004.
XX
PF 20-AUG-2003; 2003WO-EP009194.
XX
PR 29-AUG-2002; 2002EP-00019100.
XX
PA (HOFF) HOFFMANN LA ROCHE & CO AG F.
XX
PI Lehmann P, Roeddiger R, Walter-Matsui R;
XX
DR WPI; 2004-282643/26.
XX
PT Use of erythropoietin protein in manufacture of medicament for treating
PT disturbances of iron distribution in diabetes.
XX
PS Disclosure; Page; 31pp; English.
XX
CC The invention relates to the use of an erythropoietin (EPO) protein for
CC the treatment of disturbances of iron distribution in diabetes. The
CC erythropoietin protein is preferably a human erythropoietin (e.g.,
CC epoetin alpha and epoetin beta) which may be expressed by endogenous gene
CC activation or an erythropoeitin analogue such as darbepoietin alpha. The
CC erythropietin protein used in the method may also be modified by the
CC addition of 1-6 glycosylation sites, or by pegylation. Patients with
CC diabetes have been found to have a high probablility of be affected by
CC disturbances of iron distribution. In such patients, the overall
CC concentration of iron in the body is normal (compared with consitions
CC such as anaemia), but the individual may suffer the effects of iron
CC accumulation in certain organs, leading to organ damage and destruction,
CC and/or experience effects similar to anaemia due to iron usage in blood
CC cell formation being impaired. Erythropoietin causes bone marrow cells to
CC increase production of reticulocytes and red blood cells, and this has
CC been found to have a beneficial effect on iron distibution disturbances
CC in diabetes e.g., non-insulin dependent (type 2) diabetes. Erythropietin
CC proteins may therefore be used to manufacture a medicament for the
CC treatment of disturbances of iron distribution in diabetes. Sequences
CC ADL06782-ADL06806 represent analogues of the 165 amino acid human
CC erythropoietin which contain additional or altered glycosylation sites.
CC Note: The present sequence is not shown in the specification, but is
CC derived from the wild-type 165 residue human EPO (ADL06780) and the
CC information given on page 6.
XX
SQ Sequence 193 AA;

Query Match 100.0%; Score 846; DB 8; Length 193;
Best Local Similarity 100.0%; Pred. No. 2.4e-86;
Matches 165; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
Db 1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy 61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
Db 61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy 121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
Db 121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165

RESULT 73
ADO59436

ID ADO59436 standard; protein; 193 AA.
XX
AC ADO59436;
XX
DT 26-AUG-2004 (first entry)
XX
DE Human 165 residue erythropoietin analogue #20.
XX
KW Human; erythropoietin; EPO; iron distribution disturbance; heart disease;
KW heart insufficiency; coronary heart disease; atherosclerosis;
KW acute coronary syndrome; heart failure; congestive heart failure;
KW reticulocyte production; red blood cell production; cardiant;
KW antiarteriosclerotic; glycosylation site; analogue; mutant; mutein.
XX
OS Homo sapiens.
OS Synthetic.
XX
PN WO2004047858-A1.
XX
PD 10-JUN-2004.
XX
PF 17-NOV-2003; 2003WO-EP012822.
XX
PR 22-NOV-2002; 2002EP-00026342.
XX
PA (HOFF) HOFFMANN LA ROCHE & CO AG F.
XX
PI Lehmann P, Roeddiger R, Walter-Matsui R;
XX
DR WPI; 2004-450212/42.
XX
PT Use of erythropoietin protein in the manufacture of medicament for
PT treating disturbances of iron distribution in heart diseases e.g. heart
PT insufficiency.
XX
PS Disclosure; Page; 31pp; English.
XX
CC The invention relates to the use of an erythropoietin (EPO) protein for
CC the treatment of disturbances of iron distribution in heart diseases. The
CC erythropoietin protein is preferably a human erythropoietin (e.g.,
CC epoetin alpha and epoetin beta) which may be expressed by endogenous gene
CC activation or an erythropoeitin analogue such as darbepoietin alpha. The
CC erythropoietin protein used in the method may also be modified by the
CC addition of 1-6 glycosylation sites, or by pegylation. Patients with
CC heart diseases have been found to have a high probability of be affected
CC by disturbances of iron distribution. In such patients, the overall
CC concentration of iron in the body is normal (compared with conditions
CC such as anaemia), but the individual may suffer the effects of iron
CC accumulation in certain organs, leading to organ damage and destruction,
CC and/or experience effects similar to anaemia due to iron usage in blood
CC cell formation being impaired. Erythropoietin causes bone marrow cells to
CC increase production of reticulocytes and red blood cells, and this has
CC been found to have a beneficial effect on iron distribution disturbances
CC in heart diseases e.g., heart insufficiency, coronary heart disease,
CC atherosclerosis, acute coronary syndrome, heart failure and congestive
CC heart failure. Erythropoietin proteins may therefore be used to
CC manufacture a medicament for the treatment of disturbances of iron
CC distribution in heart diseases. Sequences ADO59417-ADO59441 represent
CC analogues of the 165 amino acid human erythropoietin which contain
CC additional or altered glycosylation sites. Note: The present sequence is
CC not shown in the specification, but is derived from the wild-type 165
CC residue human EPO (ADO59415) and the information given on page 6.
XX
SQ Sequence 193 AA;

Query Match 100.0%; Score 846; DB 8; Length 193;
Best Local Similarity 100.0%; Pred. No. 2.4e-86;
Matches 165; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
Db 1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

```
Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 74
AAR71167
ID   AAR71167 standard; protein; 194 AA.
XX
AC   AAR71167;
XX
DT   25-MAR-2003  (revised)
DT   31-OCT-1995  (first entry)
XX
DE   Human erythropoietin analogue carboxy glycosylation site.
XX
KW   Human erythropoietin; glycosylation; sialic acid; solubility; half-life;
KW   biological activity; proteolysis resistance; anaemia;
KW   chronic renal failure;
KW   analogue carboxy glycosylation site human chorionic gonadotrophin.
XX
OS   Homo sapiens.
XX
PN   WO9505465-A1.
XX
PD   23-FEB-1995.
XX
PF   16-AUG-1994;   94WO-US009257.
XX
PR   17-AUG-1993;   93US-00108016.
XX
PA   (AMGE-) AMGEN INC.
XX
PI   Elliott SG,  Byrne TE;
XX
DR   WPI; 1995-098764/13.
XX
PT   Erythropoietin (EPO) analogues having additional glycosylation site(s) -
PT   to increase sialic acid content, thereby increasing solubility, serum
PT   half-life, biological activity and resistance to proteolysis.
XX
PS   Claim 13; Page 80-81; 108pp; English.
XX
CC   AAR71167 is a human erythropoietin (EPO) analogue with additional C-
CC   terminal amino acids (from the C-terminus of human chorionic
CC   gonadotrophin), which comprise at least one glycosylation site. This is
CC   used to increase the sialic acid content which in turn increases the
CC   solubility, half-life, biological activity and proteolysis resistance of
CC   the protein. The analogue is useful in claimed compsns. for the treatment
CC   of chronic renal failure associated anaemia. (Updated on 25-MAR-2003 to
CC   correct PN field.)
XX
SQ   Sequence 194 AA;

  Query Match             100.0%;  Score 846;  DB 2;  Length 194;
  Best Local Similarity   100.0%;  Pred. No. 2.4e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 75
AAW62048
ID   AAW62048 standard; protein; 194 AA.
XX
AC   AAW62048;
XX
DT   10-SEP-1998  (first entry)
XX
DE   Human erythropoietin clone 7.2.
XX
KW   Human; erythropoietin; EPO; Chinese hamster ovary cell; CHO; strain;
KW   medicine; biological research.
XX
OS   Homo sapiens.
XX
FH   Key             Location/Qualifiers
FT   Peptide         1. .27
FT                   /label= signal
FT   Protein         28. .194
FT                   /label= erythropoietin
XX
PN   RU2089611-C1.
XX
PD   10-SEP-1997.
XX
PF   13-JUL-1995;   95RU-00111858.
XX
PR   13-JUL-1995;   95RU-00111858.
XX
PA   (MEDB=) MED BIOTECHN RES PRODN CENTRE.
XX
PI   Zelenin MG,  Kamerova IA,  Kolobkov SL;
XX
DR   WPI; 1998-205757/18.
DR   N-PSDB; AAV37951.
XX
PT   New strain of cultivated cells of Chinese hamster - acts as producer of
PT   human erythropoietin which can be used in medicine and in biological
PT   research.
XX
PS   Disclosure; Col 15-22; 13pp; English.
XX
CC   The present sequence represents human erythropoietin clone 7.2 from the
CC   present invention. The present invention describes a new CHO strain of
CC   cultivated cells of Chinese hamster VSKK (P) 637 D, which produces human
CC   erythropoietin. The new strain is used as a new strain-producer of human
CC   erythropoietin, which can be used in medical therapy and research, and
CC   also in biological research. The use of the strain reduces the cost of
CC   production of human erythropoietin owing to increased productivity of the
CC   strain
XX
SQ   Sequence 194 AA;

  Query Match             100.0%;  Score 846;  DB 2;  Length 194;
  Best Local Similarity   100.0%;  Pred. No. 2.4e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         29 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 88

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         89 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 148

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        149 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 193


RESULT 76
```

```
AAB10654
ID   AAB10654 standard; protein; 194 AA.
XX
AC   AAB10654;
XX
DT   19-JAN-2001  (first entry)
XX
DE   Human erythropoietin protein from clone 7.2.
XX
KW   Erythropoietin; human; antianemic; late erythrocyte precursor cell;
KW   replacement therapy; treatment.
XX
OS   Homo sapiens.
XX
PN   DE19855489-A1.
XX
PD   17-AUG-2000.
XX
PF   01-DEC-1998;   98DE-01055489.
XX
PR   01-DEC-1998;   98DE-01055489.
XX
PA   (GROZ/) GROZA I.
XX
DR   WPI; 2000-566040/53.
DR   N-PSDB; AAA71992.
XX
PT   New nucleic acid molecule comprising simian virus 40 regulatory sequences
PT   and antibiotic resistance gene, useful for expressing erythropoietin in
PT   mammalian cells for treating anemia.
XX
PS   Claim 1; Fig 5; 18pp; German.
XX
CC   This invention describes a novel nucleic acid molecule (I) encoding an
CC   erythropoietin (EPO) polypeptide (II), transcriptional and translational
CC   regulatory sequences from simian virus 40 (SV40), including the SV40
CC   early promoter and a sequence encoding resistance to an antibiotic. The
CC   product of the invention has antianemic activity. EPO regulates
CC   proliferation and differentiation of late erythrocyte precursor cells.
CC   (I) is used for the recombinant production of human EPO in mammalian
CC   cells. EPO is used, in replacement therapy, to treat anemia. Cells
CC   transformed with (I) produce EPO at a high level (e.g. 1500-1800
CC   international units/ml) which is stable under non-selection conditions.
CC   The plasmid copy number in the cells can be increased without using the
CC   expensive and highly cytostatic agent methotrexate. This sequence
CC   represents the human erythropoietin protein which is described in the
CC   method of the invention
XX
SQ   Sequence 194 AA;

  Query Match             100.0%;  Score 846;  DB 3;  Length 194;
  Best Local Similarity   100.0%;  Pred. No. 2.4e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         29 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 88

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         89 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 148

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        149 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 193


RESULT 77
ADL06826
ID   ADL06826 standard; protein; 194 AA.
XX
AC   ADL06826;
XX
DT   03-JUN-2004  (first entry)
XX
DE   Human 165 residue erythropoietin analogue #45.
XX
KW   Human; erythropoietin; EPO; iron distribution disturbance; diabetes;
KW   non-insulin dependent diabetes; type 2 diabetes; reticulocyte production;
KW   red blood cell production; glycosylation site; analogue; antidiabetic;
KW   mutant; mutein.
XX
OS   Homo sapiens.
OS   Synthetic.
XX
PN   WO2004019972-A1.
XX
PD   11-MAR-2004.
XX
PF   20-AUG-2003; 2003WO-EP009194.
XX
PR   29-AUG-2002; 2002EP-00019100.
XX
PA   (HOFF ) HOFFMANN LA ROCHE & CO AG F.
XX
PI   Lehmann P,  Roeddiger R,  Walter-Matsui R;
XX
DR   WPI; 2004-282643/26.
XX
PT   Use of erythropoietin protein in manufacture of medicament for treating
PT   disturbances of iron distribution in diabetes.
XX
PS   Disclosure; Page; 31pp; English.
XX
CC   The invention relates to the use of an erythropoietin (EPO) protein for
CC   the treatment of disturbances of iron distribution in diabetes. The
CC   erythropoietin protein is preferably a human erythropoietin (e.g.,
CC   epoetin alpha and epoetin beta) which may be expressed by endogenous gene
CC   activation or an erythropoeitin analogue such as darbepoietin alpha. The
CC   erythropietin protein used in the method may also be modified by the
CC   addition of 1-6 glycosylation sites, or by pegylation. Patients with
CC   diabetes have been found to have a high probablility of be affected by
CC   disturbances of iron distribution. In such patients, the overall
CC   concentration of iron in the body is normal (compared with consitions
CC   such as anaemia), but the individual may suffer the effects of iron
CC   accumulation in certain organs, leading to organ damage and destruction,
CC   and/or experience effects similar to anaemia due to iron usage in blood
CC   cell formation being impaired. Erythropoietin causes bone marrow cells to
CC   increase production of reticulocytes and red blood cells, and this has
CC   been found to have a beneficial effect on iron distibution disturbances
CC   in diabetes e.g., non-insulin dependent (type 2) diabetes. Erythropietin
CC   proteins may therefore be used to manufacture a medicament for the
CC   treatment of disturbances of iron distribution in diabetes. Sequences
CC   ADL06807-ADL06831 represent analogues of the 166 amino acid human
CC   erythropoietin which contain additional or altered glycosylation sites.
CC   Note: The present sequence is not shown in the specification, but is
CC   derived from the wild-type 166 residue human EPO (ADL06781) and the
CC   information given on page 6.
XX
SQ   Sequence 194 AA;

  Query Match             100.0%;  Score 846;  DB 8;  Length 194;
  Best Local Similarity   100.0%;  Pred. No. 2.4e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
```

```
RESULT 78
ADO59461
ID   ADO59461 standard; protein; 194 AA.
XX
AC   ADO59461;
XX
DT   26-AUG-2004  (first entry)
XX
DE   Human 165 residue erythropoietin analogue #45.
XX
KW   Human; erythropoietin; EPO; iron distribution disturbance; heart disease;
KW   heart insufficiency; coronary heart disease; atherosclerosis;
KW   acute coronary syndrome; heart failure; congestive heart failure;
KW   reticulocyte production; red blood cell production; cardiant;
KW   antiarteriosclerotic; glycosylation site; analogue; mutant; mutein.
XX
OS   Homo sapiens.
OS   Synthetic.
XX
PN   WO2004047858-A1.
XX
PD   10-JUN-2004.
XX
PF   17-NOV-2003; 2003WO-EP012822.
XX
PR   22-NOV-2002; 2002EP-00026342.
XX
PA   (HOFF ) HOFFMANN LA ROCHE & CO AG F.
XX
PI   Lehmann P,  Roeddiger R,  Walter-Matsui R;
XX
DR   WPI; 2004-450212/42.
XX
PT   Use of erythropoietin protein in the manufacture of medicament for
PT   treating disturbances of iron distribution in heart diseases e.g. heart
PT   insufficiency.
XX
PS   Disclosure; Page; 31pp; English.
XX
CC   The invention relates to the use of an erythropoietin (EPO) protein for
CC   the treatment of disturbances of iron distribution in heart diseases. The
CC   erythropoietin protein is preferably a human erythropoietin (e.g.,
CC   epoetin alpha and epoetin beta) which may be expressed by endogenous gene
CC   activation or an erythropoeitin analogue such as darbepoietin alpha. The
CC   erythropoietin protein used in the method may also be modified by the
CC   addition of 1-6 glycosylation sites, or by pegylation. Patients with
CC   heart diseases have been found to have a high probability of be affected
CC   by disturbances of iron distribution. In such patients, the overall
CC   concentration of iron in the body is normal (compared with conditions
CC   such as anaemia), but the individual may suffer the effects of iron
CC   accumulation in certain organs, leading to organ damage and destruction,
CC   and/or experience effects similar to anaemia due to iron usage in blood
CC   cell formation being impaired. Erythropoietin causes bone marrow cells to
CC   increase production of reticulocytes and red blood cells, and this has
CC   been found to have a beneficial effect on iron distribution disturbances
CC   in heart diseases e.g., heart insufficiency, coronary heart disease,
CC   atherosclerosis, acute coronary syndrome, heart failure and congestive
CC   heart failure. Erythropoietin proteins may therefore be used to
CC   manufacture a medicament for the treatment of disturbances of iron
CC   distribution in heart diseases. Sequences ADO59442-ADO59466 represent
CC   analogues of the 166 amino acid human erythropoietin which contain
CC   additional or altered glycosylation sites. Note: The present sequence is
CC   not shown in the specification, but is derived from the wild-type 166
CC   residue human EPO (ADO59416) and the information given on page 6.
XX
SQ   Sequence 194 AA;

  Query Match           100.0%;  Score 846;  DB 8;  Length 194;
  Best Local Similarity  100.0%;  Pred. No. 2.4e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 79
ABB77902
ID   ABB77902 standard; protein; 196 AA.
XX
AC   ABB77902;
XX
DT   07-OCT-2002  (first entry)
XX
DE   Amino acid sequence of a modified human erythropoietin (EPO).
XX
KW   Human; erythropoietin; EPO; glycoprotein; reticulocyte production;
KW   red blood cell production; anaemia; chronic renal failure;
KW   acquired immunodeficiency syndrome; AIDS; cancer; bone marrow;
KW   committed erythroid progenitor.
XX
OS   Synthetic.
OS   Homo sapiens.
XX
FH   Key             Location/Qualifiers
FT   Peptide         1. .27
FT                   /note= "secretion signal peptide"
FT   Cleavage-site   28. .30
FT                   /note= "proteolytic cleavage site"
FT   Protein         31. .196
FT                   /note= "EPO protein"
XX
PN   WO200249673-A2.
XX
PD   27-JUN-2002.
XX
PF   08-DEC-2001; 2001WO-EP014434.
XX
PR   20-DEC-2000; 2000EP-00127891.
XX
PA   (HOFF ) HOFFMANN LA ROCHE & CO AG F.
XX
PI   Burg J,  Engel A,  Franze R,  Hilger B,  Schurig HE,  Tischer W;
PI   Wozny M;
XX
DR   WPI; 2002-566640/60.
DR   N-PSDB; ABL59290.
XX
PT   Novel conjugate of erythropoietin glycoprotein with polyethylene glycol,
PT   useful for treating diseases correlated with anemia in chronic renal
PT   failure patients and acquired immunodeficiency syndrome.
XX
PS   Disclosure; Fig 4; 40pp; English.
XX
CC   The present sequence represents a modified human erythropoietin (EPO)
CC   protein. The EPO was extended at the N-terminal by a proteolytic cleavage
CC   site. It was used to produce conjugates of the invention. The
CC   specification describes a conjugate comprising an EPO glycoprotein having
CC   an N-terminal alpha-amino group, chosen from human EPO (hEPO) or its
CC   analogues (where hEPO is modified by addition of 1-6 glycosylation sites
CC   or a rearrangement of a glycosylation site). The glycoprotein is
CC   covalently linked to a poly(ethylene glycol) group. The EPO glycoprotein
CC   has in vivo biological activity of causing bone marrow cells to increase
CC   production of reticulocytes and red blood cells. The conjugate increased
CC   circulating half-life and plasma residence time, decreased clearance,
CC   increased clinical activity in vivo, improved potency and stability, when
```

```
CC   compared to unmodified EPO. The EPO conjugate is useful for preparing
CC   medicaments for the treatment and prophylaxis of diseases correlated with
CC   anaemia in chronic renal failure patients (CRF), acquired
CC   immunodeficiency syndrome (AIDS) and for treating cancer patients
CC   undergoing chemotherapy. It is also useful for treating patients by
CC   stimulating the division and differentiation of committed erythroid
CC   progenitors in the bone marrow
XX
SQ   Sequence 196 AA;

  Query Match             100.0%;  Score 846;  DB 5;  Length 196;
  Best Local Similarity   100.0%;  Pred. No. 2.5e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         31 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 90

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         91 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 150

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        151 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 195


RESULT 80
ABB77901
ID   ABB77901 standard; protein; 201 AA.
XX
AC   ABB77901;
XX
DT   07-OCT-2002  (first entry)
XX
DE   Amino acid sequence of a modified human erythropoietin (EPO).
XX
KW   Human; erythropoietin; EPO; glycoprotein; reticulocyte production;
KW   red blood cell production; anaemia; chronic renal failure;
KW   acquired immunodeficiency syndrome; AIDS; cancer; bone marrow;
KW   committed erythroid progenitor.
XX
OS   Synthetic.
OS   Homo sapiens.
XX
FH   Key             Location/Qualifiers
FT   Peptide         1. .27
FT                   /note= "secretion signal peptide"
FT   Cleavage-site   28. .35
FT                   /note= "proteolytic cleavage site"
FT   Protein         36. .201
FT                   /note= "EPO protein"
XX
PN   WO200249673-A2.
XX
PD   27-JUN-2002.
XX
PF   08-DEC-2001; 2001WO-EP014434.
XX
PR   20-DEC-2000; 2000EP-00127891.
XX
PA   (HOFF ) HOFFMANN LA ROCHE & CO AG F.
XX
PI   Burg J,  Engel A,  Franze R,  Hilger B,  Schurig HE,  Tischer W;
PI   Wozny M;
XX
DR   WPI; 2002-566640/60.
DR   N-PSDB; ABL59289.
XX
PT   Novel conjugate of erythropoietin glycoprotein with polyethylene glycol,
PT   useful for treating diseases correlated with anemia in chronic renal
PT   failure patients and acquired immunodeficiency syndrome.
XX
PS   Disclosure; Fig 3; 40pp; English.
XX
CC   The present sequence represents a modified human erythropoietin (EPO)
CC   protein. The EPO was extended at the N-terminal by a proteolytic cleavage
CC   site. It was used to produce conjugates of the invention. The
CC   specification describes a conjugate comprising an EPO glycoprotein having
CC   an N-terminal alpha-amino group, chosen from human EPO (hEPO) or its
CC   analogues (where hEPO is modified by addition of 1-6 glycosylation sites
CC   or a rearrangement of a glycosylation site). The glycoprotein is
CC   covalently linked to a poly(ethylene glycol) group. The EPO glycoprotein
CC   has in vivo biological activity of causing bone marrow cells to increase
CC   production of reticulocytes and red blood cells. The conjugate increased
CC   circulating half-life and plasma residence time, decreased clearance,
CC   increased clinical activity in vivo, improved potency and stability, when
CC   compared to unmodified EPO. The EPO conjugate is useful for preparing
CC   medicaments for the treatment and prophylaxis of diseases correlated with
CC   anaemia in chronic renal failure patients (CRF), acquired
CC   immunodeficiency syndrome (AIDS) and for treating cancer patients
CC   undergoing chemotherapy. It is also useful for treating patients by
CC   stimulating the division and differentiation of committed erythroid
CC   progenitors in the bone marrow
XX
SQ   Sequence 201 AA;

  Query Match             100.0%;  Score 846;  DB 5;  Length 201;
  Best Local Similarity   100.0%;  Pred. No. 2.6e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         36 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 95

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         96 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 155

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        156 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 200


RESULT 81
ABB77903
ID   ABB77903 standard; protein; 201 AA.
XX
AC   ABB77903;
XX
DT   07-OCT-2002  (first entry)
XX
DE   Amino acid sequence of a modified human erythropoietin (EPO).
XX
KW   Human; erythropoietin; EPO; glycoprotein; reticulocyte production;
KW   red blood cell production; anaemia; chronic renal failure;
KW   acquired immunodeficiency syndrome; AIDS; cancer; bone marrow;
KW   committed erythroid progenitor.
XX
OS   Synthetic.
OS   Homo sapiens.
XX
FH   Key             Location/Qualifiers
FT   Peptide         1. .27
FT                   /note= "secretion signal peptide"
FT   Cleavage-site   28. .35
FT                   /note= "proteolytic cleavage site"
FT   Protein         36. .201
FT                   /note= "EPO protein"
XX
PN   WO200249673-A2.
XX
PD   27-JUN-2002.
XX
PF   08-DEC-2001; 2001WO-EP014434.
XX
```

```
PR   20-DEC-2000; 2000EP-00127891.
XX
PA   (HOFF ) HOFFMANN LA ROCHE & CO AG F.
XX
PI   Burg J,  Engel A,  Franze R,  Hilger B,  Schurig HE,  Tischer W;
PI   Wozny M;
XX
DR   WPI; 2002-566640/60.
DR   N-PSDB; ABL59291.
XX
PT   Novel conjugate of erythropoietin glycoprotein with polyethylene glycol,
PT   useful for treating diseases correlated with anemia in chronic renal
PT   failure patients and acquired immunodeficiency syndrome.
XX
PS   Disclosure; Fig 5; 40pp; English.
XX
CC   The present sequence represents a modified human erythropoietin (EPO)
CC   protein. The EPO was extended at the N-terminal by a proteolytic cleavage
CC   site. It was used to produce conjugates of the invention. The
CC   specification describes a conjugate comprising an EPO glycoprotein having
CC   an N-terminal alpha-amino group, chosen from human EPO (hEPO) or its
CC   analogues (where hEPO is modified by addition of 1-6 glycosylation sites
CC   or a rearrangement of a glycosylation site). The glycoprotein is
CC   covalently linked to a poly(ethylene glycol) group. The EPO glycoprotein
CC   has in vivo biological activity of causing bone marrow cells to increase
CC   production of reticulocytes and red blood cells. The conjugate increased
CC   circulating half-life and plasma residence time, decreased clearance,
CC   increased clinical activity in vivo, improved potency and stability, when
CC   compared to unmodified EPO. The EPO conjugate is useful for preparing
CC   medicaments for the treatment and prophylaxis of diseases correlated with
CC   anaemia in chronic renal failure patients (CRF), acquired
CC   immunodeficiency syndrome (AIDS) and for treating cancer patients
CC   undergoing chemotherapy. It is also useful for treating patients by
CC   stimulating the division and differentiation of committed erythroid
CC   progenitors in the bone marrow
XX
SQ   Sequence 201 AA;

  Query Match             100.0%;  Score 846;  DB 5;  Length 201;
  Best Local Similarity   100.0%;  Pred. No. 2.6e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         36 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 95

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         96 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 155

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        156 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 200


RESULT 82
ADJ71846
ID   ADJ71846 standard; protein; 205 AA.
XX
AC   ADJ71846;
XX
DT   06-MAY-2004  (first entry)
XX
DE   Non-glycosylated EPO analogue with modified protease B signal peptide.
XX
KW   non-glycosylated erythropoietin analogue; EPO analogue; PEG; anaemia;
KW   protease B signal peptide.
XX
OS   Chimeric.
OS   Synthetic.
OS   Unidentified.
XX
FH   Key             Location/Qualifiers
FT   Misc-difference 1. .39
FT                   /note= "Modified protease B signal peptide region"
FT   Misc-difference 40. .205
FT                   /note= "Non-glycosylated EPO analogue region"
XX
PN   WO2004009627-A1.
XX
PD   29-JAN-2004.
XX
PF   17-JUL-2003; 2003WO-CA001020.
XX
PR   19-JUL-2002; 2002US-0396750P.
XX
PA   (CANG-) CANGENE CORP.
XX
PI   Cossar JD,  Malek LT,  Stewart DIH;
XX
DR   WPI; 2004-214326/20.
DR   N-PSDB; ADJ71845.
XX
PT   A non-glycosylated erythropoietin (EPO) analog useful treating anemia,
PT   where the lysine at position 45 and/or 116 has been replaced with an
PT   amino acid that cannot be pegylated.
XX
PS   Disclosure; SEQ ID NO 29; 74pp; English.
XX
CC   The invention comprises the amino acid and coding sequences of non-
CC   glycosylated erythropoietin (EPO) analogues, where the lysine at position
CC   45 and/or 116 has been replaced with an amino acid that cannot be
CC   pegylated. The non-glycosylated EPO analogues of the invention are useful
CC   for treating anaemia. The present amino acid sequence represents a non-
CC   glycosylated EPO analogue with a modified protease B signal peptide.
CC   NOTE: The present sequence is included in the sequence listing as SEQ ID
CC   No 29, however another sequence on page 28 of the specification is also
CC   shown as SEQ ID No 29.
XX
SQ   Sequence 205 AA;

  Query Match             100.0%;  Score 846;  DB 8;  Length 205;
  Best Local Similarity   100.0%;  Pred. No. 2.6e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         40 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 99

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        100 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 159

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        160 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 204


RESULT 83
ADO79063
ID   ADO79063 standard; protein; 209 AA.
XX
AC   ADO79063;
XX
DT   29-JUL-2004  (first entry)
XX
DE   Human thrombopoietin/erythropoietin fusion protein #2.
XX
KW   fusion protein; carboxy terminal peptide; CTP; human; thrombopoietin;
KW   TPO; erythropoietin; EPO; anaemia.
XX
OS   Homo sapiens.
OS   Chimeric.
XX
PN   GB2382580-A.
XX
```

PD 04-JUN-2003.
XX
PF 06-AUG-2002; 2002GB-00018252.
XX
PR 29-NOV-2001; 2001KR-00074975.
XX
PA (CHEI-) CHEIL JEDANG CORP.
XX
PI Lee D, Oh M, Chung B, Park J, Kim K;
XX
DR WPI; 2003-471850/45.
DR N-PSDB; ADO79077.
XX
PT Novel fusion protein having enhanced in vivo activity useful for treating
PT anemia, comprises carboxy terminal peptide of thrombopoietin fused with
PT carboxy terminal of human erythropoietin.
XX
PS Disclosure; SEQ ID NO 4; 34pp; English.
XX
CC The invention comprises a fusion protein consisting of the carboxy
CC terminal peptide (CTP) of human thrombopoietin (TPO) fused to the carboxy
CC terminal of human erythropoietin (EPO). The fusion protein of the
CC invention is useful for the treatment of anaemia. The present amino acid
CC sequence represents a human thrombopoietin/erythropoietin fusion protein
CC of the invention.
XX
SQ Sequence 209 AA;

Query Match 100.0%; Score 846; DB 7; Length 209;
Best Local Similarity 100.0%; Pred. No. 2.7e-86;
Matches 165; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
Db 28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy 61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
Db 88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy 121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
Db 148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192

RESULT 84
ABB79939
ID ABB79939 standard; protein; 220 AA.
XX
AC ABB79939;
XX
DT 12-DEC-2002 (first entry)
XX
DE Human erythropoietin-HCG C-terminal peptide fusion protein ECTP.
XX
KW Human chorionic gonadotropin; HCG; human; erythropoietin; EPO; ECTP;
KW anaemia; therapy; antianaemic.
XX
OS Homo sapiens.
OS Synthetic.
XX
FH Key Location/Qualifiers
FT Protein 1. .192
FT /note= "human erythropoietin"
FT Peptide 193. .220
FT /note= "HCG beta subunit CTP"
XX
PN WO200248194-A1.
XX
PD 20-JUN-2002.
XX
PF 10-DEC-2001; 2001WO-KR002137.
XX
PR 11-DEC-2000; 2000KR-00075230.
PR 21-NOV-2001; 2001KR-00072713.
XX
PA (CHEI-) CHEIL JEDANG CO.
XX
PI Lee D, Oh M, Kim K, Chung B, Ha B, Park J;
XX
DR WPI; 2002-713247/77.
DR N-PSDB; ABQ81360.
XX
PT Novel fusion protein useful for industrial purposes, comprises carboxy
PT terminal of human erythropoietin fused with carboxy terminal peptide
PT fragment of beta subunit of human chorionic gonadotropin.
XX
PS Example 1; Fig 2; 30pp; English.
XX
CC The present sequence is the protein sequence of a fusion protein, termed
CC ECTP, in which the C-terminus of human erythropoietin (EPO) is fused with
CC a C-terminal peptide (CTP) (see also ABB81359) of of human chorionic
CC gonadotrophin (HCG) beta subunit. The CTP comprises amino acids 118-145
CC (see also ABB79937) of the HCG beta subunit. The invention provides ECTP
CC fusion protein and nucleotide sequences encoding it, a plasmid containing
CC the nucleotide sequences, a host cell (e.g. CHO) transfected with the
CC plasmid, and a method for producing the fusion protein by cultivation of
CC the transfected cell line. Fusion to HCG beta subunit CTP enhances the in
CC vivo activity of EPO for treatment of anaemia. The CTP provides extra
CC glycosylation sites, increasing the half-life of EPO without loss of the
CC inherent activity of EPO and without causing any antigenicity when
CC applied to the human body. Pharmacokinetic experiments performed in mice
CC showed that ECTP had 2.5 times longer half-life than EPO
XX
SQ Sequence 220 AA;

Query Match 100.0%; Score 846; DB 5; Length 220;
Best Local Similarity 100.0%; Pred. No. 2.9e-86;
Matches 165; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
Db 28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy 61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
Db 88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy 121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
Db 148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192

RESULT 85
ABR57656
ID ABR57656 standard; protein; 220 AA.
XX
AC ABR57656;
XX
DT 04-DEC-2003 (first entry)
XX
DE Fusion protein comprising erythropoietin and mutant CTP fragment.
XX
KW Antianaemic; human; EPO; CTP; HCG; erythropoietin;
KW Carboxyl Terminal Peptide; human chorionic gonadotropin; anaemia.
XX
OS Synthetic.
XX
PN EP1316561-A1.
XX
PD 04-JUN-2003.
XX
PF 14-AUG-2002; 2002EP-00255679.
XX
PR 03-DEC-2001; 2001KR-00075994.
XX

PA (CHEI-) CHEIL JEDANG CORP.
XX
PI Lee D, Oh M, Kim K, Chung B, Park J;
XX
DR WPI; 2003-495240/47.
DR N-PSDB; ACC80208.
XX
PT New fusion protein, useful for treating anemia, comprises human
PT erythropoietin having a carboxyl terminal and a carboxyl terminal peptide
PT fragment of a human chorionic gonadotropin beta-subunit linked to the
PT carboxyl terminal.
XX
PS Disclosure; Page 8-9; 19pp; English.
XX
CC The present invention relates to a fusion protein (ABR57656), comprising
CC human erythropoietin (EPO) and a mutant of a Carboxyl Terminal Peptide
CC (CTP; ABR57655) fragment of a human chorionic gonadotropin (HCG) beta-
CC subunit with 1-4 amino acid substitutions in the CTP fragment. The fusion
CC protein is useful in preparing a medicament for treating anaemia
XX
SQ Sequence 220 AA;

Query Match 100.0%; Score 846; DB 7; Length 220;
Best Local Similarity 100.0%; Pred. No. 2.9e-86;
Matches 165; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
Db 28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy 61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
Db 88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy 121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
Db 148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192

RESULT 86
AAR23596
ID AAR23596 standard; protein; 302 AA.
XX
AC AAR23596;
XX
DT 20-OCT-1992 (first entry)
XX
DE Recombinant hematopoietic molecule 1.
XX
KW IL-3; EPO; haematopoiesis.
XX
OS Homo sapiens.
XX
PN WO9206116-A.
XX
PD 16-APR-1992.
XX
PF 26-SEP-1991; 91WO-US007053.
XX
PR 28-SEP-1990; 90US-00589958.
XX
PA (ORTH) ORTHO PHARM CORP.
XX
PI Rosen JI;
XX
DR WPI; 1992-150819/18.
XX
PT Recombinant haematopoietic molecules useful in treating anaemia(s) -
PT comprise IL3 or GM-CSF and EPO, G-CSF, IL-5 or M-CSF and has early and
PT later myeloid differentiation activity.
XX
PS Disclosure; Page 34; 82pp; English.
XX
CC This protein sequence given comprises the entire amino acid sequence of a
CC recombinant haematopoietic molecule, with the amino portion comprisng IL-
CC 3 and the carboxy portion comprising EPO. (Specific sequences for these
CC portions are given in AAR23591 and AAR23593.) Within the scope of the
CC invention hybrid molecules were produced which contain at least a portion
CC of an early MDF and at least a portion of a late MDF covalently linked.
CC These compounds can be used to promote heamatopoiesis in a patient. The
CC bonding of the early and late factors allows a very high conc. of late
CC MDF at the surface of a cell which the early MDF is bound. It also allows
CC the early MDF to act more specifically to stimulate only the desired
CC lineage, thus reducing undesirable effects. These compounds are useful
CC for treating anaemias of various origins eg.renal failure and AIDS. It is
CC easier to produce and administer one recombinant molecule rather than two
CC separate molecules
XX
SQ Sequence 302 AA;

Query Match 100.0%; Score 846; DB 2; Length 302;
Best Local Similarity 100.0%; Pred. No. 4.6e-86;
Matches 165; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
Db 137 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 196

Qy 61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
Db 197 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 256

Qy 121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
Db 257 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 301

RESULT 87
AAR23598
ID AAR23598 standard; protein; 303 AA.
XX
AC AAR23598;
XX
DT 20-OCT-1992 (first entry)
XX
DE Recombinant hematopoietic molecule 3.
XX
KW IL-3; EPO; haematopoiesis.
XX
OS Homo sapiens.
XX
PN WO9206116-A.
XX
PD 16-APR-1992.
XX
PF 26-SEP-1991; 91WO-US007053.
XX
PR 28-SEP-1990; 90US-00589958.
XX
PA (ORTH) ORTHO PHARM CORP.
XX
PI Rosen JI;
XX
DR WPI; 1992-150819/18.
XX
PT Recombinant haematopoietic molecules useful in treating anaemia(s) -
PT comprise IL3 or GM-CSF and EPO, G-CSF, IL-5 or M-CSF and has early and
PT later myeloid differentiation activity.
XX
PS Disclosure; Page 38; 82pp; English.
XX
CC This protein sequence given comprises the entire amino acid sequence of a
CC recombinant haematopoietic molecule, with the amino portion comprisng EPO
CC and the carboxyl portion comprising IL-3. (Specific sequences for these
CC portions are given in AAR23591 and AAR23593.) Within the scope of the
CC invention hybrid molecules were produced which contain at least a portion

```
CC   of an early MDF and at least a portion of a late MDF covalently linked.
CC   These compounds can be used to promote heamatopoiesis in a patient. The
CC   bonding of the early and late factors allows a very high conc. of late
CC   MDF at the surface of a cell which the early MDF is bound. It also allows
CC   the early MDF to act more specifically to stimulate only the desired
CC   lineage, thus reducing undesirable effects. These compounds are useful
CC   for treating anaemias of various origins eg.renal failure and AIDS. It is
CC   easier to produce and administer one recombinant molecule rather than two
CC   separate molecules
XX
SQ   Sequence 303 AA;

  Query Match             100.0%;  Score 846;  DB 2;  Length 303;
  Best Local Similarity   100.0%;  Pred. No. 4.7e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 88
AAR23075
ID   AAR23075 standard; protein; 321 AA.
XX
AC   AAR23075;
XX
DT   20-OCT-1992  (first entry)
XX
DE   IL-3:Epo short, recombinant hematopoietic molecule.
XX
KW   Early MDF; late MDF; haematopoiesis; IL-3; Epo; growth factor.
XX
OS   Homo sapiens.
XX
FH   Key             Location/Qualifiers
FT   Peptide         1. .19
FT                   /label= sig_peptide 20. .321
FT                   /label= mat_protein
XX
PN   WO9206116-A.
XX
PD   16-APR-1992.
XX
PF   26-SEP-1991;   91WO-US007053.
XX
PR   28-SEP-1990;   90US-00589958.
XX
PA   (ORTH ) ORTHO PHARM CORP.
XX
PI   Rosen JI;
XX
DR   WPI; 1992-150819/18.
DR   N-PSDB; AAQ24281.
XX
PT   Recombinant haematopoietic molecules useful in treating anaemia(s) -
PT   comprise IL3 or GM-CSF and EPO, G-CSF, IL-5 or M-CSF and has early and
PT   later myeloid differentiation activity.
XX
PS   Disclosure; Page 42; 82pp; English.
XX
CC   The amino acid sequence given is an IL-3:Epo hybrid growth factor derived
CC   from a construction formed by ligating various synthetic oligonucleotides
CC   corresponding to Epo and IL-3 gene sequences. This hybrid growth factor
CC   is a recombinant haematopoietic molecule which contains at least a
CC   portion of an early MDF and at least a portion of a late MDF covalently
CC   linked. This compound can be used to promote heamatopoiesis in a patient.
CC   The bonding of the early and late factors allows a very high conc. of
CC   late MDF at the surface of a cell which the early MDF is bound. It also
CC   allows the early MDF to act more specifically to stimulate only the
CC   desired lineage, thus reducing undesirable effects. These compounds are
CC   useful for treating anaemias of various origins eg.renal failure and
CC   AIDS. It is easier to produce and administer one recombinant molecule
CC   rather than two separate molecules
XX
SQ   Sequence 321 AA;

  Query Match             100.0%;  Score 846;  DB 2;  Length 321;
  Best Local Similarity   100.0%;  Pred. No. 5.1e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        156 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 215

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        216 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 275

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        276 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 320


RESULT 89
AAR23597
ID   AAR23597 standard; protein; 321 AA.
XX
AC   AAR23597;
XX
DT   20-OCT-1992  (first entry)
XX
DE   Recombinant hematopoietic molecule 2.
XX
KW   IL-3; EPO; haematopoiesis.
XX
OS   Homo sapiens.
XX
PN   WO9206116-A.
XX
PD   16-APR-1992.
XX
PF   26-SEP-1991;   91WO-US007053.
XX
PR   28-SEP-1990;   90US-00589958.
XX
PA   (ORTH ) ORTHO PHARM CORP.
XX
PI   Rosen JI;
XX
DR   WPI; 1992-150819/18.
XX
PT   Recombinant haematopoietic molecules useful in treating anaemia(s) -
PT   comprise IL3 or GM-CSF and EPO, G-CSF, IL-5 or M-CSF and has early and
PT   later myeloid differentiation activity.
XX
PS   Disclosure; Page 36; 82pp; English.
XX
CC   This protein sequence given comprises the entire amino acid sequence of a
CC   recombinant haematopoietic molecule, with the amino portion comprisng IL-
CC   3 and the carboxy portion comprising EPO. (Specific sequences for these
CC   portions are given in AAR23591 and AAR23593.) Within the scope of the
CC   invention hybrid molecules were produced which contain at least a portion
CC   of an early MDF and at least a portion of a late MDF covalently linked.
CC   These compounds can be used to promote heamatopoiesis in a patient. The
CC   bonding of the early and late factors allows a very high conc. of late
CC   MDF at the surface of a cell which the early MDF is bound. It also allows
CC   the early MDF to act more specifically to stimulate only the desired
```

```
CC   lineage, thus reducing undesirable effects. These compounds are useful
CC   for treating anaemias of various origins eg.renal failure and AIDS. It is
CC   easier to produce and administer one recombinant molecule rather than two
CC   separate molecules
XX
SQ   Sequence 321 AA;

  Query Match             100.0%;  Score 846;  DB 2;  Length 321;
  Best Local Similarity   100.0%;  Pred. No. 5.1e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        156 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 215

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        216 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 275

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        276 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 320


RESULT 90
AAR23599
ID   AAR23599 standard; protein; 322 AA.
XX
AC   AAR23599;
XX
DT   20-OCT-1992  (first entry)
XX
DE   Recombinant hematopoietic molecule 4.
XX
KW   IL-3; EPO; haematopoiesis.
XX
OS   Homo sapiens.
XX
PN   WO9206116-A.
XX
PD   16-APR-1992.
XX
PF   26-SEP-1991;   91WO-US007053.
XX
PR   28-SEP-1990;   90US-00589958.
XX
PA   (ORTH ) ORTHO PHARM CORP.
XX
PI   Rosen JI;
XX
DR   WPI; 1992-150819/18.
XX
PT   Recombinant haematopoietic molecules useful in treating anaemia(s) -
PT   comprise IL3 or GM-CSF and EPO, G-CSF, IL-5 or M-CSF and has early and
PT   later myeloid differentiation activity.
XX
PS   Disclosure; Page 39; 82pp; English.
XX
CC   This protein sequence given comprises the entire amino acid sequence of a
CC   recombinant haematopoietic molecule, with the amino portion comprisng EPO
CC   and the carboxyl portion comprising IL-3. (Specific sequences for these
CC   portions are given in AAR23591 and AAR23593.) Within the scope of the
CC   invention hybrid molecules were produced which contain at least a portion
CC   of an early MDF and at least a portion of a late MDF covalently linked.
CC   These compounds can be used to promote heamatopoiesis in a patient. The
CC   bonding of the early and late factors allows a very high conc. of late
CC   MDF at the surface of a cell which the early MDF is bound. It also allows
CC   the early MDF to act more specifically to stimulate only the desired
CC   lineage, thus reducing undesirable effects. These compounds are useful
CC   for treating anaemias of various origins eg.renal failure and AIDS. It is
CC   easier to produce and administer one recombinant molecule rather than two
CC   separate molecules
XX
SQ   Sequence 322 AA;

  Query Match             100.0%;  Score 846;  DB 2;  Length 322;
  Best Local Similarity   100.0%;  Pred. No. 5.1e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 91
AAR23076
ID   AAR23076 standard; protein; 330 AA.
XX
AC   AAR23076;
XX
DT   20-OCT-1992  (first entry)
XX
DE   Epo:IL-3 short, recombinant hematopoietic molecule.
XX
KW   Early MDF; late MDF; haematopoiesis; Epo; IL-3; growth factor.
XX
OS   Homo sapiens.
XX
FH   Key             Location/Qualifiers
FT   Peptide          1. .27
FT                    /label= sig_peptide
FT   Protein          28. .330
FT                    /label= mat_protein
XX
PN   WO9206116-A.
XX
PD   16-APR-1992.
XX
PF   26-SEP-1991;   91WO-US007053.
XX
PR   28-SEP-1990;   90US-00589958.
XX
PA   (ORTH ) ORTHO PHARM CORP.
XX
PI   Rosen JI;
XX
DR   WPI; 1992-150819/18.
DR   N-PSDB; AAQ24282.
XX
PT   Recombinant haematopoietic molecules useful in treating anaemia(s) -
PT   comprise IL3 or GM-CSF and EPO, G-CSF, IL-5 or M-CSF and has early and
PT   later myeloid differentiation activity.
XX
PS   Disclosure; Page 44; 82pp; English.
XX
CC   The amino acid sequence given is an Epo:IL-3 hybrid growth factor derived
CC   from a construction formed by ligating the native Epo signal sequence and
CC   various synthetic oligonucleotides corresponding to Epo and IL-3 gene
CC   sequences. This hybrid growth factor is a haematopoietic molecule which
CC   contains at least a portion of an early MDF and at least a portion of a
CC   late MDF covalently linked. This compound can be used to promote
CC   heamatopoiesis in a patient. The bonding of the early and late factors
CC   allows a very high conc. of late MDF at the surface of a cell which the
CC   early MDF is bound. It also allows the early MDF to act more specifically
CC   to stimulate only the desired lineage, thus reducing undesirable effects.
CC   These compounds are useful for treating anaemias of various origins
CC   eg.renal failure and AIDS. It is easier to produce and administer one
CC   recombinant molecule rather than two separate molecules
```

```
XX
SQ   Sequence 330 AA;

  Query Match             100.0%;  Score 846;  DB 2;  Length 330;
  Best Local Similarity   100.0%;  Pred. No. 5.3e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 92
AAR23078
ID   AAR23078 standard; protein; 340 AA.
XX
AC   AAR23078;
XX
DT   20-OCT-1992  (first entry)
XX
DE   IL-3:Epo Flex, recombinant hematopoietic molecule.
XX
KW   Early MDF; late MDF; haematopoiesis; IL-3; Epo; growth factor; linker.
XX
OS   Homo sapiens.
XX
FH   Key             Location/Qualifiers
FT   Peptide         1. .19
FT                   /label= sig_peptide
FT   Protein         20. .339
FT                   /label= mat_protein
XX
PN   WO9206116-A.
XX
PD   16-APR-1992.
XX
PF   26-SEP-1991;   91WO-US007053.
XX
PR   28-SEP-1990;   90US-00589958.
XX
PA   (ORTH ) ORTHO PHARM CORP.
XX
PI   Rosen JI;
XX
DR   WPI; 1992-150819/18.
DR   N-PSDB; AAQ24284.
XX
PT   Recombinant haematopoietic molecules useful in treating anaemia(s) -
PT   comprise IL3 or GM-CSF and EPO, G-CSF, IL-5 or M-CSF and has early and
PT   later myeloid differentiation activity.
XX
PS   Disclosure; Page 49; 82pp; English.
XX
CC   The amino acid sequence given is an IL-3:Epo hybrid growth factor derived
CC   from a construction formed by ligating various synthetic oligonucleotides
CC   corresponding to Epo and IL-3 gene sequences. The sequence given is
CC   comparable to that given in AAR23075 except that a longer linker has been
CC   incorporated into this sequence. This hybrid growth factor is a
CC   recombinant haematopoietic molecule which contains at least a portion of
CC   an early MDF and at least a portion of a late MDF covalently linked. This
CC   compound can be used to promote heamatopoiesis in a patient. The bonding
CC   of the early and late factors allows a very high conc. of late MDF at the
CC   surface of a cell which the early MDF is bound. It also allows the early
CC   MDF to act more specifically to stimulate only the desired lineage, thus
CC   reducing undesirable effects. These compounds are useful for treating
CC   anaemias of various origins eg.renal failure and AIDS. It is easier to
CC   produce and administer one recombinant molecule rather than two separate
CC   molecules
XX
SQ   Sequence 340 AA;

  Query Match             100.0%;  Score 846;  DB 2;  Length 340;
  Best Local Similarity   100.0%;  Pred. No. 5.5e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        175 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 234

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        235 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 294

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        295 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 339


RESULT 93
AAR23079
ID   AAR23079 standard; protein; 349 AA.
XX
AC   AAR23079;
XX
DT   20-OCT-1992  (first entry)
XX
DE   Epo:IL-3 Flex, recombinant hematopoietic molecule.
XX
KW   Early MDF; late MDF; haematopoiesis; Epo; IL-3; linker; growth factor.
XX
OS   Homo sapiens.
XX
FH   Key             Location/Qualifiers
FT   Peptide         1. .27
FT                   /label= sig_peptide
FT   Protein         28. .349
FT                   /label= mat_protein
XX
PN   WO9206116-A.
XX
PD   16-APR-1992.
XX
PF   26-SEP-1991;   91WO-US007053.
XX
PR   28-SEP-1990;   90US-00589958.
XX
PA   (ORTH ) ORTHO PHARM CORP.
XX
PI   Rosen JI;
XX
DR   WPI; 1992-150819/18.
DR   N-PSDB; AAQ24285.
XX
PT   Recombinant haematopoietic molecules useful in treating anaemia(s) -
PT   comprise IL3 or GM-CSF and EPO, G-CSF, IL-5 or M-CSF and has early and
PT   later myeloid differentiation activity.
XX
PS   Disclosure; Page 51; 82pp; English.
XX
CC   The amino acid sequence given is an Epo:IL-3 hybrid growth factor derived
CC   from a construction formed by ligating the native Epo signal sequence and
CC   various synthetic oligonucleotides corresponding to Epo and IL-3 gene
CC   sequences. This molecule is comparable to the sequence given in AAR23076
CC   and contains a flexible linker molecule. This hybrid growth factor is a
CC   haematopoietic molecule which contains at least a portion of an early MDF
CC   and at least a portion of a late MDF covalently linked. This compound can
CC   be used to promote heamatopoiesis in a patient. The bonding of the early
CC   and late factors allows a very high conc. of late MDF at the surface of a
```

```
CC   cell which the early MDF is bound. It also allows the early MDF to act
CC   more specifically to stimulate only the desired lineage, thus reducing
CC   undesirable effects. These compounds are useful for treating anaemias of
CC   various origins eg.renal failure and AIDS. It is easier to produce and
CC   administer one recombinant molecule rather than two separate molecules
XX
SQ   Sequence 349 AA;

  Query Match             100.0%;  Score 846;  DB 2;  Length 349;
  Best Local Similarity   100.0%;  Pred. No. 5.7e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 94
ADO79062
ID   ADO79062 standard; protein; 370 AA.
XX
AC   ADO79062;
XX
DT   29-JUL-2004  (first entry)
XX
DE   Human thrombopoietin/erythropoietin fusion protein #1.
XX
KW   fusion protein; carboxy terminal peptide; CTP; human; thrombopoietin;
KW   TPO; erythropoietin; EPO; anaemia.
XX
OS   Homo sapiens.
OS   Chimeric.
XX
PN   GB2382580-A.
XX
PD   04-JUN-2003.
XX
PF   06-AUG-2002; 2002GB-00018252.
XX
PR   29-NOV-2001; 2001KR-00074975.
XX
PA   (CHEI-) CHEIL JEDANG CORP.
XX
PI   Lee D,  Oh M,  Chung B,  Park J,  Kim K;
XX
DR   WPI; 2003-471850/45.
DR   N-PSDB; ADO79076.
XX
PT   Novel fusion protein having enhanced in vivo activity useful for treating
PT   anemia, comprises carboxy terminal peptide of thrombopoietin fused with
PT   carboxy terminal of human erythropoietin.
XX
PS   Disclosure; SEQ ID NO 3; 34pp; English.
XX
CC   The invention comprises a fusion protein consisting of the carboxy
CC   terminal peptide (CTP) of human thrombopoietin (TPO) fused to the carboxy
CC   terminal of human erythropoietin (EPO). The fusion protein of the
CC   invention is useful for the treatment of anaemia. The present amino acid
CC   sequence represents a human thrombopoietin/erythropoietin fusion protein
CC   of the invention.
XX
SQ   Sequence 370 AA;

  Query Match             100.0%;  Score 846;  DB 7;  Length 370;
  Best Local Similarity   100.0%;  Pred. No. 6.2e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 95
AAW99360
ID   AAW99360 standard; protein; 376 AA.
XX
AC   AAW99360;
XX
DT   21-MAY-1999  (first entry)
XX
DE   Human erythropoietin homodimer fusion protein.
XX
KW   Human; erythropoietin; dimer; trimer; polymer; fusion protein; cancer;
KW   biological activity; anaemia; proliferation; differentiation; progenitor;
KW   leucocyte; granulocyte; blood; myelosuppressed patient.
XX
OS   Homo sapiens.
OS   Synthetic.
XX
PN   WO9902710-A1.
XX
PD   21-JAN-1999.
XX
PF   09-JUL-1998;   98WO-US013944.
XX
PR   10-JUL-1997;   97US-00890929.
PR   03-FEB-1998;   98US-00018138.
XX
PA   (BETH-) BETH ISRAEL DEACONESS MEDICAL CENT.
XX
PI   Sytkowski AJ;
XX
DR   WPI; 1999-120911/10.
DR   N-PSDB; AAX25701.
XX
PT   New fusion protein with increased activity comprising at least two
PT   protein molecules - used to, e.g. treat erythropoietin related deficiency
PT   states for treatment of anaemia.
XX
PS   Example 1; Fig 16A-C; 119pp; English.
XX
CC   This sequence represents a human erythropoietin (EPO) homodimeric fusion
CC   protein. The invention relates to the production of dimeric, trimeric or
CC   polymeric fusion proteins with increased biological activity. The fusion
CC   proteins are used to treat or prevent protein-related deficiency states,
CC   specifically, where the protein is erythropoietin (EPO; AAX25689),
CC   anaemia, but also for increasing proliferation, differentiation and
CC   activity of haematopoietic progenitors (e.g. increasing numbers of
CC   leucocytes and granulocytes in the blood of myelosuppressed patients) or
CC   for treating cancer and other cell growth disorders
XX
SQ   Sequence 376 AA;

  Query Match             100.0%;  Score 846;  DB 2;  Length 376;
  Best Local Similarity   100.0%;  Pred. No. 6.4e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87
```

```
Qy          61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy         121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
               |||||||||||||||||||||||||||||||||||||||||||||
Db         148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 96
ABU64200
ID   ABU64200 standard; protein; 428 AA.
XX
AC   ABU64200;
XX
DT   11-MAR-2004  (first entry)
XX
DE   Plasmid pED-dC-natEpoFc nativeEPO/Fcgamma1 insert protein.
XX
KW   Transepithelial systemic delivery; therapeutic delivery; aerosol;
KW   FcRn binding partner; lung.
XX
OS   Synthetic.
XX
PN   WO2003077834-A2.
XX
PD   25-SEP-2003.
XX
PF   03-JUL-2002; 2002WO-US021335.
XX
PR   15-MAR-2002; 2002US-0364482P.
XX
PA   (BGHM ) BRIGHAM & WOMENS HOSPITAL INC.
XX
PI   Blumberg RS,  Lencer WI,  Simister NE,  Bitonti AJ;
XX
DR   WPI; 2003-767442/72.
DR   N-PSDB; AAL56123.
XX
PT   Aerosol useful for systemic delivery of a therapeutic agent e.g.
PT   erythropoietin, growth hormone, interferon-alpha, or interferon-beta,
PT   comprises a conjugate of the agent and neonatal epithelial receptor-
PT   binding partner.
XX
PS   Example 5; Fig 5B; 0pp; English.
XX
CC   The present invention relates to an aerosol which comprises a conjugate
CC   of a therapeutic agent and neonatal Fc receptor (FcRn) binding partner.
CC   The particles in the aerosol have a mass median aerodynamic diameter
CC   (MMAD) of at least 3 micro m. The aerosol can be used for the systemic
CC   delivery of a therapeutic agent (e.g. antigen (e.g. tumour antigen),
CC   polypeptide, oligonucleotide (e.g. antisense oligonucleotide),
CC   erythropoietin, growth hormone, interferon-alpha, interferon-beta and
CC   follicle stimulating hormone). The present sequence is a protein used in
CC   the exemplification of the invention
XX
SQ   Sequence 428 AA;

  Query Match           100.0%;  Score 846;  DB 7;  Length 428;
  Best Local Similarity  100.0%;  Pred. No. 7.7e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy           1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy          61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
               ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy         121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
               |||||||||||||||||||||||||||||||||||||||||||||
Db         148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 97
ADO10513
ID   ADO10513 standard; protein; 428 AA.
XX
AC   ADO10513;
XX
DT   01-JUL-2004  (first entry)
XX
DE   EPO signal peptide/EPO/IgG1 Fc fragment fusion protein, SEQ ID NO:10.
XX
KW   Drug delivery; aerosol; transepithelial; FcRn ligand;
KW   neonatal Fc receptor; central airway epithelium; lung; antigen;
KW   tumour antigen; erythropoietin; EPO; growth hormone; interferon-alpha;
KW   IFN-alpha; interferon-beta; IFN-beta; follicle stimulating hormone; FSH;
KW   therapeutic antibody; CAMPATH; SIMULECT; ZENAPAX; REMICADE; HUMIRA;
KW   SYNAGIS; RITUXAN; HERCEPTIN; CEA-CIDE; pneumonia; lung cancer;
KW   extranodal pulmonary non-Hodgkin's lymphoma; allograft rejection;
KW   autoimmune disease; rheumatoid arthritis; Crohn's disease; antirheumatic;
KW   antiarthritic; cytostatic; antiinflammatory; immunotherapy; vaccine;
KW   human; immunoglobulin G1; IgG1 Fc fragment; Fc-gamma-1;
KW   Kb signal peptide; fusion protein; plasmid pED.dC.natEpoFc.
XX
OS   Homo sapiens.
OS   Chimeric.
OS   Synthetic.
XX
FH   Key             Location/Qualifiers
FT   Peptide         1. .27
FT                   /label= EPO_signal_peptide
FT   Protein         28. .428
FT                   /note= "EPO/IgG1 Fc fragment fusion protein"
FT   Region          28. .193
FT                   /note= "Human mature EPO"
FT   Region          194. .201
FT                   /note= "8 residue peptide linker (SEQ ID NO:27)"
FT   Region          202. .428
FT                   /note= "IgG1 Fc fragment_(SEQ ID NO:2)"
XX
PN   WO2004004798-A2.
XX
PD   15-JAN-2004.
XX
PF   09-MAY-2003; 2003WO-US014428.
XX
PR   03-JUL-2002; 2002WO-US021335.
XX
PA   (BGHM ) BRIGHAM & WOMENS HOSPITAL INC.
PA   (UYBR-) UNIV BRANDEIS.
PA   (CHIL-) CHILDRENS MEDICAL CENT.
PA   (SYNT-) SYNTONIX PHARM INC.
XX
PI   Blumberg RS,  Lencer WI,  Simister NE,  Bitonti AJ;
XX
DR   WPI; 2004-099348/10.
DR   N-PSDB; ADO10512.
XX
PT   Systemic delivery of therapeutic agent involves administering effective
PT   amount of aerosol of therapeutic agent and neonatal Fc receptor (FcRn)
PT   binding partner to lung.
XX
PS   Example 5; SEQ ID NO 10; 122pp; English.
XX
CC   The invention relates to a method for the transepithelial systemic
CC   delivery of a therapeutic agent. The method involves administering an
CC   effective amount of an aerosol of a therapeutic agent (especially an
CC   antibody) and a neonatal Fc receptor (FcRn) binding partner to the lungs
CC   such that a central lung zone/peripheral lung zone deposition ratio (C/P
CC   ratio) is 0.7 or more. Human FcRn is expressed in adult epithelial
CC   tissues, and provides a receptor-specific mechanism for transport across
CC   an epithelial barrier. Its expression has been found to be more extensive
```

```
CC   in central airways than in the periphery of the lung. The invention also
CC   relates to an aerosol of a conjugate of a therapeutic agent and an FcRn
CC   binding partner, where the aerosol particles have a mass median
CC   aerodynamic diameter (MMAD) of 3 micrometres or more; an aerosol delivery
CC   system; and a method for its manufacture. The method can be used to
CC   administer a wide variety of therapeutic agents to central airway
CC   epithelium. Such therapeutic agents include oligonucleotides (including
CC   antisense oligonucleotides) or proteins such as antigens (especially
CC   tumour antigens), erythropoietin (EPO), growth hormone, interferon-alpha
CC   (IFN-alpha), interferon-beta (IFN-beta), follicle stimulating hormone
CC   (FSH) and especially therapeutic or diagnostic antibodies. Therapeutic
CC   antibodies that may be administered using the method of the invention
CC   comprise those targeted to CD52, CD25, TNF-alpha, respiratory syncytial
CC   virus (RSV), CD20, HER2 or CEA, selected from CAMPATH, SIMULECT, ZENAPAX,
CC   REMICADE, HUMIRA, SYNAGIS, RITUXAN, HERCEPTIN and CEA-CIDE. Therapeutics
CC   administered using the method of the invention may be used to treat deep
CC   lung diseases such as RSV pneumonia, cytomegalovirus (CMV) pneumonia,
CC   primary and metastatic lung cancer, and extranodal pulmonary non-
CC   Hodgkin's lymphoma; extrapulmonary diseases such as cancer and allograft
CC   rejection; and autoimmune diseases chosen from rheumatoid arthritis and
CC   Crohn's disease. The present sequence represents a fusion protein
CC   comprising the native human EPO signal peptide, human EPO and the human
CC   IgG1 Fc fragment (Fc-gamma-1), which is encoded by plasmid
CC   pED.dC.natEpoFc.
XX
SQ   Sequence 428 AA;

  Query Match             100.0%;  Score 846;  DB 8;  Length 428;
  Best Local Similarity   100.0%;  Pred. No. 7.7e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 98
ADM33857
ID   ADM33857 standard; protein; 435 AA.
XX
AC   ADM33857;
XX
DT   03-JUN-2004  (first entry)
XX
DE   Human HuEPO-L-vFcgamma1 fusion protein.
XX
KW   Erythropoietin; EPO; immunoglobulin; IgG;
KW   fragment crystallisation region; Fc; chronic anaemia; renal disease;
KW   cancer chemotherapy; rheumatoid arthritis; AIDS;
KW   myelodysplastic syndrome; (HuEPO)-L-vFcgamma1; human.
XX
OS   Homo sapiens.
OS   Synthetic.
XX
FH   Key             Location/Qualifiers
FT   Peptide         1. .27
FT                   /note= "Signal peptide"
FT   Protein         28. .192
FT                   /note= "EPO"
FT   Peptide         193. .208
FT                   /note= "Linker"
FT   Protein         209. .435
FT                   /note= "IgG1 Fc"
FT   Misc-difference 222
FT                   /note= "Wild-type Leu substituted by Val"
FT   Misc-difference 318
FT                   /note= "Wild-type Leu substituted by Ala"
XX
PN   US2003082749-A1.
XX
PD   01-MAY-2003.
XX
PF   17-AUG-2001; 2001US-00932812.
XX
PR   17-AUG-2001; 2001US-00932812.
XX
PA   (SUNL/) SUN L K.
PA   (SUNB/) SUN B N C.
PA   (SUNC/) SUN C R Y.
XX
PI   Sun LK,  Sun BNC,  Sun CRY;
XX
DR   WPI; 2003-616080/58.
DR   N-PSDB; ADM33856.
XX
PT   New recombinant human erythropoietin-L-vFc fusion proteins, useful for
PT   treating patients with chronic anemia caused by renal failure, cancer
PT   chemotherapy, rheumatoid arthritis, or azathioprine treatment for HIV
PT   infection.
XX
PS   Claim 5; Fig 2C; 14pp; English.
XX
CC   The invention relates to a recombinant human erythropoietin (HuEPO)-L-vFc
CC   fusion protein comprising HuEPO, a peptide linker, and a human
CC   immunoglobulin G Fc (fragment crystallisation region) variant. Also
CC   included is a carbohydrate-derived cell line producing the human
CC   erythropoietin-L-vFc fusion protein cited above in its growth medium in
CC   excess of 10 microgramme per million cells in a 24-hour period. The HuEPO
CC   -L-vFc fusion protein exhibits an enhanced in vitro biological activity
CC   of at least 2-fold relative to that of recombinant HuEPO on a molar
CC   basis. The flexible peptide linker containing about 20 or fewer amino
CC   acids is present between HuEPO and the human IgG Fc variant. The IgG Fc
CC   contains amino acid mutations to attenuate effector functions. The human
CC   IgG Fc variant comprises a hinge, CH2 and CH3 domains of human IgG2 with
CC   Pro331Ser mutation, human IgG4 with Ser228Pro and Leu235Ala mutations, or
CC   human IgG1 with Leu234Val, Leu235Ala and Pro331Ser mutations. The
CC   recombinant human erythropoietin-L-vFc fusion proteins are useful for
CC   treating patients with chronic anaemia caused by renal failure, cancer
CC   chemotherapy, rheumatoid arthritis, azathioprine treatment for HIV
CC   infection, or myelodysplastic syndrome. The increased activity and
CC   prolonged presence of the human erythropoietin-L-vFc fusion protein in
CC   the serum, as compared to prior art, leads to lower dosages and less
CC   frequent injections. Less fluctuations of the drug in serum
CC   concentrations means improved safety and tolerability, and less frequent
CC   injections result in better patient compliance and quality of life. The
CC   present sequence represents the fusion protein HuEPO-L-vFcgamma1.
XX
SQ   Sequence 435 AA;

  Query Match             100.0%;  Score 846;  DB 7;  Length 435;
  Best Local Similarity   100.0%;  Pred. No. 7.9e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 99
ADR48988
```

```
ID   ADR48988 standard; protein; 435 AA.
XX
AC   ADR48988;
XX
DT   02-DEC-2004  (first entry)
XX
DE   HuEPO-L-vFc fusion protein #2.
XX
KW   antianaemic; nephrotropic; human; HuEPO-L-vFc; erythropoietin; EPO;
KW   anaemia; renal disease; cancer chemotherapy; rheumatoid arthritis;
KW   AZT treatment; HIV infection; myelodysplastic syndrome; renal failure.
XX
OS   Homo sapiens.
OS   Synthetic.
XX
PN   US2004175824-A1.
XX
PD   09-SEP-2004.
XX
PF   21-JAN-2004; 2004US-00761593.
XX
PR   17-AUG-2001; 2001US-00932812.
XX
PA   (SUNL/) SUN L K.
PA   (SUNB/) SUN B N C.
PA   (SUNC/) SUN C R Y.
XX
PI   Sun LK,  Sun BNC,  Sun CRY;
XX
DR   WPI; 2004-634851/61.
DR   N-PSDB; ADR48987.
XX
PT   New recombinant HuEPO-L-vFc fusion protein comprises human erythropoietin
PT   (HuEPO), a peptide linker, and a human IgG Fc variant, useful for
PT   treating chronic anemia due to renal diseases, cancer chemotherapy, or
PT   rheumatoid arthritis.
XX
PS   Claim 5; SEQ ID NO 22; 31pp; English.
XX
CC   A recombinant HuEPO-L-vFc fusion protein comprises human erythropoietin
CC   (HuEPO), a peptide linker, and a human IgG Fc variant, is new.
CC   INDEPENDENT CLAIMS are also included for the following: a chinese hamster
CC   ovary (CHO)-derived cell line producing the HuEPO-L-vFc fusion protein in
CC   its growth medium in excess of 10 &micro;g per million cells in a 24 hour
CC   period; and a method for making a recombinant fusion protein comprising
CC   HuEPO, a flexible peptide linker, and a human IgG Fc variant. Preferred
CC   Protein: The peptide linker containing 20 or fewer amino acids is present
CC   between HuEPO and the human IgG Fc variant, and comprises two or more
CC   amino acids selected from glycine, serine, alanine, and threonine. The
CC   human IgG Fc variant comprises a hinge, CH2, and CH3 domains of human
CC   IgG2 with Pro331Ser mutation comprising 436 amino acids (SEQ ID NO. 18).
CC   It also comprises a hinge, CH2, and CH3 domains of human IgG4 with
CC   Ser228Pro and Leu235Ala mutations comprising 437 amino acids (SEQ ID NO.
CC   20). It further comprises a hinge, CH2, and CH3 domains of human IgB1
CC   with Leu234Val, Leu235Ala, and Pro331Ser mutations comprising 435 amino
CC   acids (SEQ ID NO. 22). The HuEPO-L-vFc fusion protein exhibits in vitro
CC   biological activity similar to or higher than that of rHuEPO on a molar
CC   basis. Preferred CHO-Derived Cell Line: The CHO-derived cell line
CC   producing the HuEPO-L-vFc fusion protein in its growth medium in excess
CC   of 30 &micro;g per million cells in a 24 hour period. The human IgG Fc
CC   variant comprises a hinge, CH2, CH3 domains of human IgG selected from
CC   IgB1 as SEQ ID NO. 22, IgG2 as SEQ ID NO. 18, and IgG4 as SEQ ID NO. 20,
CC   the IgG Fc contains amino acid mutations to attenuate effector functions,
CC   a flexible peptide linker containing 20 or fewer amino acids is present
CC   between HuEPO and human IgG Fc variant, and the HuEPO-L-vFc fusion
CC   protein exhibits in vitro biological activity similar to or higher than
CC   that of rHuEPO on a molar basis. Preferred Method: Making a recombinant
CC   fusion protein comprising HuEPO, a flexible peptide linker, and a human
CC   IgG Fc variant comprises: generating a CHO-derived cell line; growing the
CC   cell line where the recombinant protein is expressed in its growth medium
CC   in excess of 10 &micro;g per million cells in a 24 hour period; and
CC   purifying the expressed protein from (b), where the recombinant fusion
CC   protein exhibits in vitro biological activity similar to or higher than
CC   that of rHuEPO on a molar basis. Antianemic; Nephrotropic. No biological
CC   data given. None given. Administration can be through subcutaneous or
CC   intravenous route. No dosage given. The recombinant HuEPO-L-vFc fusion
CC   protein is useful for treating patients with chronic anemia due to renal
CC   diseases, cancer chemotherapy, rheumatoid arthritis, AZT treatment for
CC   HIV infection, or myelodysplastic syndrome. It is also useful in the
CC   treatment of renal failure. A fusion protein was assembled from several
CC   DNA segments. To obtain the gene encoding the leader peptide and mature
CC   protein of human erythropoietin (EPO), cDNA library of human fetal liver
CC   or kidney was used as the template in polymerase chain reaction (PCR).
CC   For the convenience of cloning, SEQ ID NO. 1 which incorporates a
CC   restriction enzyme cleavage site is used as the 5' oligonucleotide
CC   primer. The 3' primer (SEQ ID NO. 2) eliminates the EPO termination codon
CC   and incorporates a BamHI site. The resulting DNA fragments of
CC   approximately 600 bp were inserted into a holding vector such as pUC19 at
CC   the HindIII and BamHI sites to give the pEPO plasmid. The sequence of the
CC   human EPO gene was confirmed by DNA sequencing.
XX
SQ   Sequence 435 AA;

  Query Match             100.0%;  Score 846;  DB 8;  Length 435;
  Best Local Similarity   100.0%;  Pred. No. 7.9e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 100
ADM33853
ID   ADM33853 standard; protein; 436 AA.
XX
AC   ADM33853;
XX
DT   03-JUN-2004  (first entry)
XX
DE   Human HuEPO-L-vFcgamma2 fusion protein.
XX
KW   Erythropoietin; EPO; immunoglobulin; IgG;
KW   fragment crystallisation region; Fc; chronic anaemia; renal disease;
KW   cancer chemotherapy; rheumatoid arthritis; AIDS;
KW   myelodysplastic syndrome; (HuEPO)-L-vFcgamma2; human.
XX
OS   Homo sapiens.
OS   Synthetic.
XX
FH   Key             Location/Qualifiers
FT   Peptide         1. .27
FT                   /note= "Signal peptide"
FT   Protein         28. .192
FT                   /note= "EPO"
FT   Peptide         193. .208
FT                   /note= "Linker"
FT   Protein         209. .436
FT                   /note= "IgG2 Fc"
FT   Misc-difference 390
FT                   /note= "Wild-type Pro substituted by Ser"
XX
PN   US2003082749-A1.
XX
PD   01-MAY-2003.
XX
PF   17-AUG-2001; 2001US-00932812.
XX
```

PR 17-AUG-2001; 2001US-00932812.
XX
PA (SUNL/) SUN L K.
PA (SUNB/) SUN B N C.
PA (SUNC/) SUN C R Y.
XX
PI Sun LK, Sun BNC, Sun CRY;
XX
DR WPI; 2003-616080/58.
XX
PT New recombinant human erythropoietin-L-vFc fusion proteins, useful for
PT treating patients with chronic anemia caused by renal failure, cancer
PT chemotherapy, rheumatoid arthritis, or azathioprine treatment for HIV
PT infection.
XX
PS Claim 3; Fig 2A; 14pp; English.
XX
CC The invention relates to a recombinant human erythropoietin (HuEPO)-L-vFc
CC fusion protein comprising HuEPO, a peptide linker, and a human
CC immunoglobulin G Fc (fragment crystallisation region) variant. Also
CC included is a carbohydrate-derived cell line producing the human
CC erythropoietin-L-vFc fusion protein cited above in its growth medium in
CC excess of 10 microgramme per million cells in a 24-hour period. The HuEPO
CC -L-vFc fusion protein exhibits an enhanced in vitro biological activity
CC of at least 2-fold relative to that of recombinant HuEPO on a molar
CC basis. The flexible peptide linker containing about 20 or fewer amino
CC acids is present between HuEPO and the human IgG Fc variant. The IgG Fc
CC contains amino acid mutations to attenuate effector functions. The human
CC IgG Fc variant comprises a hinge, CH2 and CH3 domains of human IgG2 with
CC Pro331Ser mutation, human IgG4 with Ser228Pro and Leu235Ala mutations, or
CC human IgG1 with Leu234Val, Leu235Ala and Pro331Ser mutations. The
CC recombinant human erythropoietin-L-vFc fusion proteins are useful for
CC treating patients with chronic anaemia caused by renal failure, cancer
CC chemotherapy, rheumatoid arthritis, azathioprine treatment for HIV
CC infection, or myelodysplastic syndrome. The increased activity and
CC prolonged presence of the human erythropoietin-L-vFc fusion protein in
CC the serum, as compared to prior art, leads to lower dosages and less
CC frequent injections. Less fluctuations of the drug in serum
CC concentrations means improved safety and tolerability, and less frequent
CC injections result in better patient compliance and quality of life. The
CC present sequence represents the fusion protein HuEPO-L-vFcgamma2.
XX
SQ Sequence 436 AA;

Query Match 100.0%; Score 846; DB 7; Length 436;
Best Local Similarity 100.0%; Pred. No. 7.9e-86;
Matches 165; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
Db 28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy 61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
Db 88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy 121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
Db 148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192

RESULT 101
ADR48984
ID ADR48984 standard; protein; 436 AA.
XX
AC ADR48984;
XX
DT 02-DEC-2004 (first entry)
XX
DE HuEPO-L-Fc fusion protein.
XX
KW antianaemic; nephrotropic; human; HuEPO-L-vFc; erythropoietin; EPO;
KW anaemia; renal disease; cancer chemotherapy; rheumatoid arthritis;
KW AZT treatment; HIV infection; myelodysplastic syndrome; renal failure.
XX
OS Homo sapiens.
OS Synthetic.
XX
PN US2004175824-A1.
XX
PD 09-SEP-2004.
XX
PF 21-JAN-2004; 2004US-00761593.
XX
PR 17-AUG-2001; 2001US-00932812.
XX
PA (SUNL/) SUN L K.
PA (SUNB/) SUN B N C.
PA (SUNC/) SUN C R Y.
XX
PI Sun LK, Sun BNC, Sun CRY;
XX
DR WPI; 2004-634851/61.
DR N-PSDB; ADR48983.
XX
PT New recombinant HuEPO-L-vFc fusion protein comprises human erythropoietin
PT (HuEPO), a peptide linker, and a human IgG Fc variant, useful for
PT treating chronic anemia due to renal diseases, cancer chemotherapy, or
PT rheumatoid arthritis.
XX
PS Claim 3; SEQ ID NO 18; 31pp; English.
XX
CC A recombinant HuEPO-L-vFc fusion protein comprises human erythropoietin
CC (HuEPO), a peptide linker, and a human IgG Fc variant, is new.
CC INDEPENDENT CLAIMS are also included for the following: a chinese hamster
CC ovary (CHO)-derived cell line producing the HuEPO-L-vFc fusion protein in
CC its growth medium in excess of 10 µg per million cells in a 24 hour
CC period; and a method for making a recombinant fusion protein comprising
CC HuEPO, a flexible peptide linker, and a human IgG Fc variant. Preferred
CC Protein: The peptide linker containing 20 or fewer amino acids is present
CC between HuEPO and the human IgG Fc variant, and comprises two or more
CC amino acids selected from glycine, serine, alanine, and threonine. The
CC human IgG Fc variant comprises a hinge, CH2, and CH3 domains of human
CC IgG2 with Pro331Ser mutation comprising 436 amino acids (SEQ ID NO. 18).
CC It also comprises a hinge, CH2, and CH3 domains of human IgG4 with
CC Ser228Pro and Leu235Ala mutations comprising 437 amino acids (SEQ ID NO.
CC 20). It further comprises a hinge, CH2, and CH3 domains of human IgB1
CC with Leu234Val, Leu235Ala, and Pro331Ser mutations comprising 435 amino
CC acids (SEQ ID NO. 22). The HuEPO-L-vFc fusion protein exhibits in vitro
CC biological activity similar to or higher than that of rHuEPO on a molar
CC basis. Preferred CHO-Derived Cell Line: The CHO-derived cell line
CC producing the HuEPO-L-vFc fusion protein in its growth medium in excess
CC of 30 µg per million cells in a 24 hour period. The human IgG Fc
CC variant comprises a hinge, CH2, CH3 domains of human IgG selected from
CC IgB1 as SEQ ID NO. 22, IgG2 as SEQ ID NO. 18, and IgG4 as SEQ ID NO. 20,
CC the IgG Fc contains amino acid mutations to attenuate effector functions,
CC a flexible peptide linker containing 20 or fewer amino acids is present
CC between HuEPO and human IgG Fc variant, and the HuEPO-L-vFc fusion
CC protein exhibits in vitro biological activity similar to or higher than
CC that of rHuEPO on a molar basis. Preferred Method: Making a recombinant
CC fusion protein comprising HuEPO, a flexible peptide linker, and a human
CC IgG Fc variant comprises: generating a CHO-derived cell line; growing the
CC cell line where the recombinant protein is expressed in its growth medium
CC in excess of 10 µg per million cells in a 24 hour period; and
CC purifying the expressed protein from (b), where the recombinant fusion
CC protein exhibits in vitro biological activity similar to or higher than
CC that of rHuEPO on a molar basis. Antianemic; Nephrotropic. No biological
CC data given. None given. Administration can be through subcutaneous or
CC intravenous route. No dosage given. The recombinant HuEPO-L-vFc fusion
CC protein is useful for treating patients with chronic anemia due to renal
CC diseases, cancer chemotherapy, rheumatoid arthritis, AZT treatment for
CC HIV infection, or myelodysplastic syndrome. It is also useful in the
CC treatment of renal failure. A fusion protein was assembled from several
CC DNA segments. To obtain the gene encoding the leader peptide and mature
CC protein of human erythropoietin (EPO), cDNA library of human fetal liver
CC or kidney was used as the template in polymerase chain reaction (PCR).

```
CC   For the convenience of cloning, SEQ ID NO. 1 which incorporates a
CC   restriction enzyme cleavage site is used as the 5' oligonucleotide
CC   primer. The 3' primer (SEQ ID NO. 2) eliminates the EPO termination codon
CC   and incorporates a BamHI site. The resulting DNA fragments of
CC   approximately 600 bp were inserted into a holding vector such as pUC19 at
CC   the HindIII and BamHI sites to give the pEPO plasmid. The sequence of the
CC   human EPO gene was confirmed by DNA sequencing.
XX
SQ   Sequence 436 AA;

  Query Match             100.0%;  Score 846;  DB 8;  Length 436;
  Best Local Similarity   100.0%;  Pred. No. 7.9e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 102
ADM33855
ID   ADM33855 standard; protein; 437 AA.
XX
AC   ADM33855;
XX
DT   03-JUN-2004  (first entry)
XX
DE   Human HuEPO-L-vFcgamma4 fusion protein.
XX
KW   Erythropoietin; EPO; immunoglobulin; IgG;
KW   fragment crystallisation region; Fc; chronic anaemia; renal disease;
KW   cancer chemotherapy; rheumatoid arthritis; AIDS;
KW   myelodysplastic syndrome; (HuEPO)-L-vFcgamma4; human.
XX
OS   Homo sapiens.
OS   Synthetic.
XX
FH   Key             Location/Qualifiers
FT   Peptide         1. .27
FT                   /note= "Signal peptide"
FT   Protein         28. .192
FT                   /note= "EPO"
FT   Peptide         193. .208
FT                   /note= "Linker"
FT   Protein         209. .437
FT                   /note= "IgG4 Fc"
FT   Misc-difference 219
FT                   /note= "Wild-type Ser substituted by Pro"
FT   Misc-difference 226
FT                   /note= "Wild-type Leu substituted by Ala"
XX
PN   US2003082749-A1.
XX
PD   01-MAY-2003.
XX
PF   17-AUG-2001; 2001US-00932812.
XX
PR   17-AUG-2001; 2001US-00932812.
XX
PA   (SUNL/) SUN L K.
PA   (SUNB/) SUN B N C.
PA   (SUNC/) SUN C R Y.
XX
PI   Sun LK,  Sun BNC,  Sun CRY;
XX
DR   WPI; 2003-616080/58.
DR   N-PSDB; ADM33854.
XX
PT   New recombinant human erythropoietin-L-vFc fusion proteins, useful for
PT   treating patients with chronic anemia caused by renal failure, cancer
PT   chemotherapy, rheumatoid arthritis, or azathioprine treatment for HIV
PT   infection.
XX
PS   Claim 4; Fig 2B; 14pp; English.
XX
CC   The invention relates to a recombinant human erythropoietin (HuEPO)-L-vFc
CC   fusion protein comprising HuEPO, a peptide linker, and a human
CC   immunoglobulin G Fc (fragment crystallisation region) variant. Also
CC   included is a carbohydrate-derived cell line producing the human
CC   erythropoietin-L-vFc fusion protein cited above in its growth medium in
CC   excess of 10 microgramme per million cells in a 24-hour period. The HuEPO
CC   -L-vFc fusion protein exhibits an enhanced in vitro biological activity
CC   of at least 2-fold relative to that of recombinant HuEPO on a molar
CC   basis. The flexible peptide linker containing about 20 or fewer amino
CC   acids is present between HuEPO and the human IgG Fc variant. The IgG Fc
CC   contains amino acid mutations to attenuate effector functions. The human
CC   IgG Fc variant comprises a hinge, CH2 and CH3 domains of human IgG2 with
CC   Pro331Ser mutation, human IgG4 with Ser228Pro and Leu235Ala mutations, or
CC   human IgG1 with Leu234Val, Leu235Ala and Pro331Ser mutations. The
CC   recombinant human erythropoietin-L-vFc fusion proteins are useful for
CC   treating patients with chronic anaemia caused by renal failure, cancer
CC   chemotherapy, rheumatoid arthritis, azathioprine treatment for HIV
CC   infection, or myelodysplastic syndrome. The increased activity and
CC   prolonged presence of the human erythropoietin-L-vFc fusion protein in
CC   the serum, as compared to prior art, leads to lower dosages and less
CC   frequent injections. Less fluctuations of the drug in serum
CC   concentrations means improved safety and tolerability, and less frequent
CC   injections result in better patient compliance and quality of life. The
CC   present sequence represents the fusion protein HuEPO-L-vFcgamma4.
XX
SQ   Sequence 437 AA;

  Query Match             100.0%;  Score 846;  DB 7;  Length 437;
  Best Local Similarity   100.0%;  Pred. No. 7.9e-86;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 103
ADR48986
ID   ADR48986 standard; protein; 437 AA.
XX
AC   ADR48986;
XX
DT   02-DEC-2004  (first entry)
XX
DE   HuEPO-L-vFc fusion protein #1.
XX
KW   antianaemic; nephrotropic; human; HuEPO-L-vFc; erythropoietin; EPO;
KW   anaemia; renal disease; cancer chemotherapy; rheumatoid arthritis;
KW   AZT treatment; HIV infection; myelodysplastic syndrome; renal failure.
XX
OS   Homo sapiens.
OS   Synthetic.
XX
PN   US2004175824-A1.
XX
```

PD 09-SEP-2004.
XX
PF 21-JAN-2004; 2004US-00761593.
XX
PR 17-AUG-2001; 2001US-00932812.
XX
PA (SUNL/) SUN L K.
PA (SUNB/) SUN B N C.
PA (SUNC/) SUN C R Y.
XX
PI Sun LK, Sun BNC, Sun CRY;
XX
DR WPI; 2004-634851/61.
DR N-PSDB; ADR48985.
XX
PT New recombinant HuEPO-L-vFc fusion protein comprises human erythropoietin
PT (HuEPO), a peptide linker, and a human IgG Fc variant, useful for
PT treating chronic anemia due to renal diseases, cancer chemotherapy, or
PT rheumatoid arthritis.
XX
PS Claim 4; SEQ ID NO 20; 31pp; English.
XX
CC A recombinant HuEPO-L-vFc fusion protein comprises human erythropoietin
CC (HuEPO), a peptide linker, and a human IgG Fc variant, is new.
CC INDEPENDENT CLAIMS are also included for the following: a chinese hamster
CC ovary (CHO)-derived cell line producing the HuEPO-L-vFc fusion protein in
CC its growth medium in excess of 10 µg per million cells in a 24 hour
CC period; and a method for making a recombinant fusion protein comprising
CC HuEPO, a flexible peptide linker, and a human IgG Fc variant. Preferred
CC Protein: The peptide linker containing 20 or fewer amino acids is present
CC between HuEPO and the human IgG Fc variant, and comprises two or more
CC amino acids selected from glycine, serine, alanine, and threonine. The
CC human IgG Fc variant comprises a hinge, CH2, and CH3 domains of human
CC IgG2 with Pro331Ser mutation comprising 436 amino acids (SEQ ID NO. 18).
CC It also comprises a hinge, CH2, and CH3 domains of human IgG4 with
CC Ser228Pro and Leu235Ala mutations comprising 437 amino acids (SEQ ID NO.
CC 20). It further comprises a hinge, CH2, and CH3 domains of human IgB1
CC with Leu234Val, Leu235Ala, and Pro331Ser mutations comprising 435 amino
CC acids (SEQ ID NO. 22). The HuEPO-L-vFc fusion protein exhibits in vitro
CC biological activity similar to or higher than that of rHuEPO on a molar
CC basis. Preferred CHO-Derived Cell Line: The CHO-derived cell line
CC producing the HuEPO-L-vFc fusion protein in its growth medium in excess
CC of 30 µg per million cells in a 24 hour period. The human IgG Fc
CC variant comprises a hinge, CH2, CH3 domains of human IgG selected from
CC IgB1 as SEQ ID NO. 22, IgG2 as SEQ ID NO. 18, and IgG4 as SEQ ID NO. 20,
CC the IgG Fc contains amino acid mutations to attenuate effector functions,
CC a flexible peptide linker containing 20 or fewer amino acids is present
CC between HuEPO and human IgG Fc variant, and the HuEPO-L-vFc fusion
CC protein exhibits in vitro biological activity similar to or higher than
CC that of rHuEPO on a molar basis. Preferred Method: Making a recombinant
CC fusion protein comprising HuEPO, a flexible peptide linker, and a human
CC IgG Fc variant comprises: generating a CHO-derived cell line; growing the
CC cell line where the recombinant protein is expressed in its growth medium
CC in excess of 10 µg per million cells in a 24 hour period; and
CC purifying the expressed protein from (b), where the recombinant fusion
CC protein exhibits in vitro biological activity similar to or higher than
CC that of rHuEPO on a molar basis. Antianemic; Nephrotropic. No biological
CC data given. None given. Administration can be through subcutaneous or
CC intravenous route. No dosage given. The recombinant HuEPO-L-vFc fusion
CC protein is useful for treating patients with chronic anemia due to renal
CC diseases, cancer chemotherapy, rheumatoid arthritis, AZT treatment for
CC HIV infection, or myelodysplastic syndrome. It is also useful in the
CC treatment of renal failure. A fusion protein was assembled from several
CC DNA segments. To obtain the gene encoding the leader peptide and mature
CC protein of human erythropoietin (EPO), cDNA library of human fetal liver
CC or kidney was used as the template in polymerase chain reaction (PCR).
CC For the convenience of cloning, SEQ ID NO. 1 which incorporates a
CC restriction enzyme cleavage site is used as the 5' oligonucleotide
CC primer. The 3' primer (SEQ ID NO. 2) eliminates the EPO termination codon
CC and incorporates a BamHI site. The resulting DNA fragments of
CC approximately 600 bp were inserted into a holding vector such as pUC19 at
CC the HindIII and BamHI sites to give the pEPO plasmid. The sequence of the
CC human EPO gene was confirmed by DNA sequencing.
XX
SQ Sequence 437 AA;

Query Match 100.0%; Score 846; DB 8; Length 437;
Best Local Similarity 100.0%; Pred. No. 7.9e-86;
Matches 165; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```
Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192
```

RESULT 104
ADF16565
ID ADF16565 standard; protein; 768 AA.
XX
AC ADF16565;
XX
DT 12-FEB-2004 (first entry)
XX
DE Human albumin therapeutic fusion protein SeqID1662.
XX
KW albumin fusion protein; albumin activity; human serum albumin;
KW serum osmotic pressure; shelf-life; stability; antidiabetic;
KW gene therapy; diabetes mellitus; human.
XX
OS Chimeric.
OS Homo sapiens.
XX
PN WO2003060071-A2.
XX
PD 24-JUL-2003.
XX
PF 23-DEC-2002; 2002WO-US040891.
XX
PR 21-DEC-2001; 2001US-0341811P.
PR 24-JAN-2002; 2002US-0350358P.
PR 28-JAN-2002; 2002US-0351360P.
PR 26-FEB-2002; 2002US-0359370P.
PR 28-FEB-2002; 2002US-0360000P.
PR 27-MAR-2002; 2002US-0367500P.
PR 08-APR-2002; 2002US-0370227P.
PR 10-MAY-2002; 2002US-0378950P.
PR 24-MAY-2002; 2002US-0382617P.
PR 28-MAY-2002; 2002US-0383123P.
PR 05-JUN-2002; 2002US-0385708P.
PR 10-JUL-2002; 2002US-0394625P.
PR 24-JUL-2002; 2002US-0398008P.
PR 09-AUG-2002; 2002US-0402131P.
PR 13-AUG-2002; 2002US-0402708P.
PR 18-SEP-2002; 2002US-0411355P.
PR 18-SEP-2002; 2002US-0411426P.
PR 02-OCT-2002; 2002US-0414984P.
PR 11-OCT-2002; 2002US-0417611P.
PR 23-OCT-2002; 2002US-0420246P.
PR 05-NOV-2002; 2002US-0423623P.
XX
PA (HUMA-) HUMAN GENOME SCI INC.
PA (DELZ) DELTA BIOTECHNOLOGY LTD.
PA (PRIN-) PRINCIPIA PHARM CORP.
XX
PI Ballance DJ, Turner AJ, Rosen CA, Haseltine WA;
XX
DR WPI; 2003-598517/56.
XX

PT New albumin fusion protein, useful for preparing a composition for
PT treating diabetes mellitus.
XX
PS Example 4; SEQ ID NO 1662; 24pp; English.
XX
CC This invention relates to a novel albumin fusion protein having albumin
CC or biological activity. Human serum albumin is responsible for a
CC significant proportion of the osmotic pressure of serum and also
CC functions as a carrier of endogenous and exogenous ligands. The fusion of
CC albumin to a therapeutic protein may increase shelf-life and stability of
CC the therapeutic protein. The albumin fusion protein of the invention may
CC allow production of compositions with antidiabetic activity whilst the
CC nucleotide sequence which encodes it may be useful for gene therapy. The
CC albumin fusion protein is useful for preparing a composition for treating
CC diabetes mellitus. The present sequence is the amino acid sequence of a
CC novel full-length human albumin therapeutic fusion protein of the
CC invention. Note: The sequence data for this patent did not form part of
CC the printed specification, but was obtained in electronic format directly
CC from WIPO at ftp.wipo.int/pub/publishedpct_sequences
XX
SQ Sequence 768 AA;

Query Match 100.0%; Score 846; DB 7; Length 768;
Best Local Similarity 100.0%; Pred. No. 1.8e-85;
Matches 165; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
Db 604 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 663

Qy 61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
Db 664 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 723

Qy 121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
Db 724 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 768

RESULT 105
ADF16425
ID ADF16425 standard; protein; 768 AA.
XX
AC ADF16425;
XX
DT 12-FEB-2004 (first entry)
XX
DE Human albumin therapeutic fusion protein SeqID1522.
XX
KW albumin fusion protein; albumin activity; human serum albumin;
KW serum osmotic pressure; shelf-life; stability; antidiabetic;
KW gene therapy; diabetes mellitus; human.
XX
OS Chimeric.
OS Homo sapiens.
XX
PN WO2003060071-A2.
XX
PD 24-JUL-2003.
XX
PF 23-DEC-2002; 2002WO-US040891.
XX
PR 21-DEC-2001; 2001US-0341811P.
PR 24-JAN-2002; 2002US-0350358P.
PR 28-JAN-2002; 2002US-0351360P.
PR 26-FEB-2002; 2002US-0359370P.
PR 28-FEB-2002; 2002US-0360000P.
PR 27-MAR-2002; 2002US-0367500P.
PR 08-APR-2002; 2002US-0370227P.
PR 10-MAY-2002; 2002US-0378950P.
PR 24-MAY-2002; 2002US-0382617P.
PR 28-MAY-2002; 2002US-0383123P.
PR 05-JUN-2002; 2002US-0385708P.
PR 10-JUL-2002; 2002US-0394625P.
PR 24-JUL-2002; 2002US-0398008P.
PR 09-AUG-2002; 2002US-0402131P.
PR 13-AUG-2002; 2002US-0402708P.
PR 18-SEP-2002; 2002US-0411355P.
PR 18-SEP-2002; 2002US-0411426P.
PR 02-OCT-2002; 2002US-0414984P.
PR 11-OCT-2002; 2002US-0417611P.
PR 23-OCT-2002; 2002US-0420246P.
PR 05-NOV-2002; 2002US-0423623P.
XX
PA (HUMA-) HUMAN GENOME SCI INC.
PA (DELZ) DELTA BIOTECHNOLOGY LTD.
PA (PRIN-) PRINCIPIA PHARM CORP.
XX
PI Ballance DJ, Turner AJ, Rosen CA, Haseltine WA;
XX
DR WPI; 2003-598517/56.
XX
PT New albumin fusion protein, useful for preparing a composition for
PT treating diabetes mellitus.
XX
PS Example 4; SEQ ID NO 1522; 24pp; English.
XX
CC This invention relates to a novel albumin fusion protein having albumin
CC or biological activity. Human serum albumin is responsible for a
CC significant proportion of the osmotic pressure of serum and also
CC functions as a carrier of endogenous and exogenous ligands. The fusion of
CC albumin to a therapeutic protein may increase shelf-life and stability of
CC the therapeutic protein. The albumin fusion protein of the invention may
CC allow production of compositions with antidiabetic activity whilst the
CC nucleotide sequence which encodes it may be useful for gene therapy. The
CC albumin fusion protein is useful for preparing a composition for treating
CC diabetes mellitus. The present sequence is the amino acid sequence of a
CC novel full-length human albumin therapeutic fusion protein of the
CC invention. Note: The sequence data for this patent did not form part of
CC the printed specification, but was obtained in electronic format directly
CC from WIPO at ftp.wipo.int/pub/publishedpct_sequences
XX
SQ Sequence 768 AA;

Query Match 100.0%; Score 846; DB 7; Length 768;
Best Local Similarity 100.0%; Pred. No. 1.8e-85;
Matches 165; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
Db 604 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 663

Qy 61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
Db 664 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 723

Qy 121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
Db 724 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 768

RESULT 106
ADF16564
ID ADF16564 standard; protein; 768 AA.
XX
AC ADF16564;
XX
DT 12-FEB-2004 (first entry)
XX
DE Human albumin therapeutic fusion protein SeqID1661.
XX
KW albumin fusion protein; albumin activity; human serum albumin;
KW serum osmotic pressure; shelf-life; stability; antidiabetic;
KW gene therapy; diabetes mellitus; human.
XX
OS Chimeric.

```
OS   Homo sapiens.
XX
PN   WO2003060071-A2.
XX
PD   24-JUL-2003.
XX
PF   23-DEC-2002; 2002WO-US040891.
XX
PR   21-DEC-2001; 2001US-0341811P.
PR   24-JAN-2002; 2002US-0350358P.
PR   28-JAN-2002; 2002US-0351360P.
PR   26-FEB-2002; 2002US-0359370P.
PR   28-FEB-2002; 2002US-0360000P.
PR   27-MAR-2002; 2002US-0367500P.
PR   08-APR-2002; 2002US-0370227P.
PR   10-MAY-2002; 2002US-0378950P.
PR   24-MAY-2002; 2002US-0382617P.
PR   28-MAY-2002; 2002US-0383123P.
PR   05-JUN-2002; 2002US-0385708P.
PR   10-JUL-2002; 2002US-0394625P.
PR   24-JUL-2002; 2002US-0398008P.
PR   09-AUG-2002; 2002US-0402131P.
PR   13-AUG-2002; 2002US-0402708P.
PR   18-SEP-2002; 2002US-0411355P.
PR   18-SEP-2002; 2002US-0411426P.
PR   02-OCT-2002; 2002US-0414984P.
PR   11-OCT-2002; 2002US-0417611P.
PR   23-OCT-2002; 2002US-0420246P.
PR   05-NOV-2002; 2002US-0423623P.
XX
PA   (HUMA-) HUMAN GENOME SCI INC.
PA   (DELZ ) DELTA BIOTECHNOLOGY LTD.
PA   (PRIN-) PRINCIPIA PHARM CORP.
XX
PI   Ballance DJ,  Turner AJ,  Rosen CA,  Haseltine WA;
XX
DR   WPI; 2003-598517/56.
XX
PT   New albumin fusion protein, useful for preparing a composition for
PT   treating diabetes mellitus.
XX
PS   Example 4; SEQ ID NO 1661; 24pp; English.
XX
CC   This invention relates to a novel albumin fusion protein having albumin
CC   or biological activity. Human serum albumin is responsible for a
CC   significant proportion of the osmotic pressure of serum and also
CC   functions as a carrier of endogenous and exogenous ligands. The fusion of
CC   albumin to a therapeutic protein may increase shelf-life and stability of
CC   the therapeutic protein. The albumin fusion protein of the invention may
CC   allow production of compositions with antidiabetic activity whilst the
CC   nucleotide sequence which encodes it may be useful for gene therapy. The
CC   albumin fusion protein is useful for preparing a composition for treating
CC   diabetes mellitus. The present sequence is the amino acid sequence of a
CC   novel full-length human albumin therapeutic fusion protein of the
CC   invention. Note: The sequence data for this patent did not form part of
CC   the printed specification, but was obtained in electronic format directly
CC   from WIPO at ftp.wipo.int/pub/publishedpct_sequences
XX
SQ   Sequence 768 AA;

  Query Match           100.0%;  Score 846;  DB 7;  Length 768;
  Best Local Similarity  100.0%;  Pred. No. 1.8e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        604 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 663

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        664 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 723

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        724 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 768


RESULT 107
ADF16426
ID   ADF16426 standard; protein; 768 AA.
XX
AC   ADF16426;
XX
DT   12-FEB-2004  (first entry)
XX
DE   Human albumin therapeutic fusion protein SeqID1523.
XX
KW   albumin fusion protein; albumin activity; human serum albumin;
KW   serum osmotic pressure; shelf-life; stability; antidiabetic;
KW   gene therapy; diabetes mellitus; human.
XX
OS   Chimeric.
OS   Homo sapiens.
XX
PN   WO2003060071-A2.
XX
PD   24-JUL-2003.
XX
PF   23-DEC-2002; 2002WO-US040891.
XX
PR   21-DEC-2001; 2001US-0341811P.
PR   24-JAN-2002; 2002US-0350358P.
PR   28-JAN-2002; 2002US-0351360P.
PR   26-FEB-2002; 2002US-0359370P.
PR   28-FEB-2002; 2002US-0360000P.
PR   27-MAR-2002; 2002US-0367500P.
PR   08-APR-2002; 2002US-0370227P.
PR   10-MAY-2002; 2002US-0378950P.
PR   24-MAY-2002; 2002US-0382617P.
PR   28-MAY-2002; 2002US-0383123P.
PR   05-JUN-2002; 2002US-0385708P.
PR   10-JUL-2002; 2002US-0394625P.
PR   24-JUL-2002; 2002US-0398008P.
PR   09-AUG-2002; 2002US-0402131P.
PR   13-AUG-2002; 2002US-0402708P.
PR   18-SEP-2002; 2002US-0411355P.
PR   18-SEP-2002; 2002US-0411426P.
PR   02-OCT-2002; 2002US-0414984P.
PR   11-OCT-2002; 2002US-0417611P.
PR   23-OCT-2002; 2002US-0420246P.
PR   05-NOV-2002; 2002US-0423623P.
XX
PA   (HUMA-) HUMAN GENOME SCI INC.
PA   (DELZ ) DELTA BIOTECHNOLOGY LTD.
PA   (PRIN-) PRINCIPIA PHARM CORP.
XX
PI   Ballance DJ,  Turner AJ,  Rosen CA,  Haseltine WA;
XX
DR   WPI; 2003-598517/56.
XX
PT   New albumin fusion protein, useful for preparing a composition for
PT   treating diabetes mellitus.
XX
PS   Example 4; SEQ ID NO 1523; 24pp; English.
XX
CC   This invention relates to a novel albumin fusion protein having albumin
CC   or biological activity. Human serum albumin is responsible for a
CC   significant proportion of the osmotic pressure of serum and also
CC   functions as a carrier of endogenous and exogenous ligands. The fusion of
CC   albumin to a therapeutic protein may increase shelf-life and stability of
CC   the therapeutic protein. The albumin fusion protein of the invention may
CC   allow production of compositions with antidiabetic activity whilst the
CC   nucleotide sequence which encodes it may be useful for gene therapy. The
CC   albumin fusion protein is useful for preparing a composition for treating
CC   diabetes mellitus. The present sequence is the amino acid sequence of a
CC   novel full-length human albumin therapeutic fusion protein of the
```

```
CC   invention. Note: The sequence data for this patent did not form part of
CC   the printed specification, but was obtained in electronic format directly
CC   from WIPO at ftp.wipo.int/pub/publishedpct_sequences
XX
SQ   Sequence 768 AA;

  Query Match             100.0%;  Score 846;  DB 7;  Length 768;
  Best Local Similarity   100.0%;  Pred. No. 1.8e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        604 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 663

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        664 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 723

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        724 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 768


RESULT 108
ADF16424
ID   ADF16424 standard; protein; 768 AA.
XX
AC   ADF16424;
XX
DT   12-FEB-2004  (first entry)
XX
DE   Human albumin therapeutic fusion protein SeqID1521.
XX
KW   albumin fusion protein; albumin activity; human serum albumin;
KW   serum osmotic pressure; shelf-life; stability; antidiabetic;
KW   gene therapy; diabetes mellitus; human.
XX
OS   Chimeric.
OS   Homo sapiens.
XX
PN   WO2003060071-A2.
XX
PD   24-JUL-2003.
XX
PF   23-DEC-2002; 2002WO-US040891.
XX
PR   21-DEC-2001; 2001US-0341811P.
PR   24-JAN-2002; 2002US-0350358P.
PR   28-JAN-2002; 2002US-0351360P.
PR   26-FEB-2002; 2002US-0359370P.
PR   28-FEB-2002; 2002US-0360000P.
PR   27-MAR-2002; 2002US-0367500P.
PR   08-APR-2002; 2002US-0370227P.
PR   10-MAY-2002; 2002US-0378950P.
PR   24-MAY-2002; 2002US-0382617P.
PR   28-MAY-2002; 2002US-0383123P.
PR   05-JUN-2002; 2002US-0385708P.
PR   10-JUL-2002; 2002US-0394625P.
PR   24-JUL-2002; 2002US-0398008P.
PR   09-AUG-2002; 2002US-0402131P.
PR   13-AUG-2002; 2002US-0402708P.
PR   18-SEP-2002; 2002US-0411355P.
PR   18-SEP-2002; 2002US-0411426P.
PR   02-OCT-2002; 2002US-0414984P.
PR   11-OCT-2002; 2002US-0417611P.
PR   23-OCT-2002; 2002US-0420246P.
PR   05-NOV-2002; 2002US-0423623P.
XX
PA   (HUMA-) HUMAN GENOME SCI INC.
PA   (DELZ ) DELTA BIOTECHNOLOGY LTD.
PA   (PRIN-) PRINCIPIA PHARM CORP.
XX
PI   Ballance DJ,  Turner AJ,  Rosen CA,  Haseltine WA;
XX
DR   WPI; 2003-598517/56.
XX
PT   New albumin fusion protein, useful for preparing a composition for
PT   treating diabetes mellitus.
XX
PS   Example 4; SEQ ID NO 1521; 24pp; English.
XX
CC   This invention relates to a novel albumin fusion protein having albumin
CC   or biological activity. Human serum albumin is responsible for a
CC   significant proportion of the osmotic pressure of serum and also
CC   functions as a carrier of endogenous and exogenous ligands. The fusion of
CC   albumin to a therapeutic protein may increase shelf-life and stability of
CC   the therapeutic protein. The albumin fusion protein of the invention may
CC   allow production of compositions with antidiabetic activity whilst the
CC   nucleotide sequence which encodes it may be useful for gene therapy. The
CC   albumin fusion protein is useful for preparing a composition for treating
CC   diabetes mellitus. The present sequence is the amino acid sequence of a
CC   novel full-length human albumin therapeutic fusion protein of the
CC   invention. Note: The sequence data for this patent did not form part of
CC   the printed specification, but was obtained in electronic format directly
CC   from WIPO at ftp.wipo.int/pub/publishedpct_sequences
XX
SQ   Sequence 768 AA;

  Query Match             100.0%;  Score 846;  DB 7;  Length 768;
  Best Local Similarity   100.0%;  Pred. No. 1.8e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        604 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 663

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        664 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 723

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        724 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 768


RESULT 109
ADF16563
ID   ADF16563 standard; protein; 768 AA.
XX
AC   ADF16563;
XX
DT   12-FEB-2004  (first entry)
XX
DE   Human albumin therapeutic fusion protein SeqID1660.
XX
KW   albumin fusion protein; albumin activity; human serum albumin;
KW   serum osmotic pressure; shelf-life; stability; antidiabetic;
KW   gene therapy; diabetes mellitus; human.
XX
OS   Chimeric.
OS   Homo sapiens.
XX
PN   WO2003060071-A2.
XX
PD   24-JUL-2003.
XX
PF   23-DEC-2002; 2002WO-US040891.
XX
PR   21-DEC-2001; 2001US-0341811P.
PR   24-JAN-2002; 2002US-0350358P.
PR   28-JAN-2002; 2002US-0351360P.
PR   26-FEB-2002; 2002US-0359370P.
PR   28-FEB-2002; 2002US-0360000P.
PR   27-MAR-2002; 2002US-0367500P.
PR   08-APR-2002; 2002US-0370227P.
PR   10-MAY-2002; 2002US-0378950P.
```

```
PR   24-MAY-2002; 2002US-0382617P.
PR   28-MAY-2002; 2002US-0383123P.
PR   05-JUN-2002; 2002US-0385708P.
PR   10-JUL-2002; 2002US-0394625P.
PR   24-JUL-2002; 2002US-0398008P.
PR   09-AUG-2002; 2002US-0402131P.
PR   13-AUG-2002; 2002US-0402708P.
PR   18-SEP-2002; 2002US-0411355P.
PR   18-SEP-2002; 2002US-0411426P.
PR   02-OCT-2002; 2002US-0414984P.
PR   11-OCT-2002; 2002US-0417611P.
PR   23-OCT-2002; 2002US-0420246P.
PR   05-NOV-2002; 2002US-0423623P.
XX
PA   (HUMA-) HUMAN GENOME SCI INC.
PA   (DELZ ) DELTA BIOTECHNOLOGY LTD.
PA   (PRIN-) PRINCIPIA PHARM CORP.
XX
PI   Ballance DJ,  Turner AJ,  Rosen CA,  Haseltine WA;
XX
DR   WPI; 2003-598517/56.
XX
PT   New albumin fusion protein, useful for preparing a composition for
PT   treating diabetes mellitus.
XX
PS   Example 4; SEQ ID NO 1660; 24pp; English.
XX
CC   This invention relates to a novel albumin fusion protein having albumin
CC   or biological activity. Human serum albumin is responsible for a
CC   significant proportion of the osmotic pressure of serum and also
CC   functions as a carrier of endogenous and exogenous ligands. The fusion of
CC   albumin to a therapeutic protein may increase shelf-life and stability of
CC   the therapeutic protein. The albumin fusion protein of the invention may
CC   allow production of compositions with antidiabetic activity whilst the
CC   nucleotide sequence which encodes it may be useful for gene therapy. The
CC   albumin fusion protein is useful for preparing a composition for treating
CC   diabetes mellitus. The present sequence is the amino acid sequence of a
CC   novel full-length human albumin therapeutic fusion protein of the
CC   invention. Note: The sequence data for this patent did not form part of
CC   the printed specification, but was obtained in electronic format directly
CC   from WIPO at ftp.wipo.int/pub/publishedpct_sequences
XX
SQ   Sequence 768 AA;

  Query Match             100.0%;  Score 846;  DB 7;  Length 768;
  Best Local Similarity   100.0%;  Pred. No. 1.8e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        604 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 663

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        664 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 723

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        724 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 768


RESULT 110
ADF15091
ID   ADF15091 standard; protein; 769 AA.
XX
AC   ADF15091;
XX
DT   12-FEB-2004  (first entry)
XX
DE   Human albumin therapeutic fusion protein SeqID387.
XX
KW   albumin fusion protein; albumin activity; human serum albumin;
KW   serum osmotic pressure; shelf-life; stability; antidiabetic;
KW   gene therapy; diabetes mellitus; human.
XX
OS   Chimeric.
OS   Homo sapiens.
XX
PN   WO2003060071-A2.
XX
PD   24-JUL-2003.
XX
PF   23-DEC-2002; 2002WO-US040891.
XX
PR   21-DEC-2001; 2001US-0341811P.
PR   24-JAN-2002; 2002US-0350358P.
PR   28-JAN-2002; 2002US-0351360P.
PR   26-FEB-2002; 2002US-0359370P.
PR   28-FEB-2002; 2002US-0360000P.
PR   27-MAR-2002; 2002US-0367500P.
PR   08-APR-2002; 2002US-0370227P.
PR   10-MAY-2002; 2002US-0378950P.
PR   24-MAY-2002; 2002US-0382617P.
PR   28-MAY-2002; 2002US-0383123P.
PR   05-JUN-2002; 2002US-0385708P.
PR   10-JUL-2002; 2002US-0394625P.
PR   24-JUL-2002; 2002US-0398008P.
PR   09-AUG-2002; 2002US-0402131P.
PR   13-AUG-2002; 2002US-0402708P.
PR   18-SEP-2002; 2002US-0411355P.
PR   18-SEP-2002; 2002US-0411426P.
PR   02-OCT-2002; 2002US-0414984P.
PR   11-OCT-2002; 2002US-0417611P.
PR   23-OCT-2002; 2002US-0420246P.
PR   05-NOV-2002; 2002US-0423623P.
XX
PA   (HUMA-) HUMAN GENOME SCI INC.
PA   (DELZ ) DELTA BIOTECHNOLOGY LTD.
PA   (PRIN-) PRINCIPIA PHARM CORP.
XX
PI   Ballance DJ,  Turner AJ,  Rosen CA,  Haseltine WA;
XX
DR   WPI; 2003-598517/56.
XX
PT   New albumin fusion protein, useful for preparing a composition for
PT   treating diabetes mellitus.
XX
PS   Example 4; SEQ ID NO 387; 24pp; English.
XX
CC   This invention relates to a novel albumin fusion protein having albumin
CC   or biological activity. Human serum albumin is responsible for a
CC   significant proportion of the osmotic pressure of serum and also
CC   functions as a carrier of endogenous and exogenous ligands. The fusion of
CC   albumin to a therapeutic protein may increase shelf-life and stability of
CC   the therapeutic protein. The albumin fusion protein of the invention may
CC   allow production of compositions with antidiabetic activity whilst the
CC   nucleotide sequence which encodes it may be useful for gene therapy. The
CC   albumin fusion protein is useful for preparing a composition for treating
CC   diabetes mellitus. The present sequence is the amino acid sequence of a
CC   novel full-length human albumin therapeutic fusion protein of the
CC   invention. Note: The sequence data for this patent did not form part of
CC   the printed specification, but was obtained in electronic format directly
CC   from WIPO at ftp.wipo.int/pub/publishedpct_sequences
XX
SQ   Sequence 769 AA;

  Query Match             100.0%;  Score 846;  DB 7;  Length 769;
  Best Local Similarity   100.0%;  Pred. No. 1.8e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         20 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 79

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
```

```
Db         80 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 139

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        140 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 184


RESULT 111
ADF15082
ID   ADF15082 standard; protein; 777 AA.
XX
AC   ADF15082;
XX
DT   12-FEB-2004  (first entry)
XX
DE   Human albumin therapeutic fusion protein SeqID378.
XX
KW   albumin fusion protein; albumin activity; human serum albumin;
KW   serum osmotic pressure; shelf-life; stability; antidiabetic;
KW   gene therapy; diabetes mellitus; human.
XX
OS   Chimeric.
OS   Homo sapiens.
XX
PN   WO2003060071-A2.
XX
PD   24-JUL-2003.
XX
PF   23-DEC-2002; 2002WO-US040891.
XX
PR   21-DEC-2001; 2001US-0341811P.
PR   24-JAN-2002; 2002US-0350358P.
PR   28-JAN-2002; 2002US-0351360P.
PR   26-FEB-2002; 2002US-0359370P.
PR   28-FEB-2002; 2002US-0360000P.
PR   27-MAR-2002; 2002US-0367500P.
PR   08-APR-2002; 2002US-0370227P.
PR   10-MAY-2002; 2002US-0378950P.
PR   24-MAY-2002; 2002US-0382617P.
PR   28-MAY-2002; 2002US-0383123P.
PR   05-JUN-2002; 2002US-0385708P.
PR   10-JUL-2002; 2002US-0394625P.
PR   24-JUL-2002; 2002US-0398008P.
PR   09-AUG-2002; 2002US-0402131P.
PR   13-AUG-2002; 2002US-0402708P.
PR   18-SEP-2002; 2002US-0411355P.
PR   18-SEP-2002; 2002US-0411426P.
PR   02-OCT-2002; 2002US-0414984P.
PR   11-OCT-2002; 2002US-0417611P.
PR   23-OCT-2002; 2002US-0420246P.
PR   05-NOV-2002; 2002US-0423623P.
XX
PA   (HUMA-) HUMAN GENOME SCI INC.
PA   (DELZ ) DELTA BIOTECHNOLOGY LTD.
PA   (PRIN-) PRINCIPIA PHARM CORP.
XX
PI   Ballance DJ,  Turner AJ,  Rosen CA,  Haseltine WA;
XX
DR   WPI; 2003-598517/56.
XX
PT   New albumin fusion protein, useful for preparing a composition for
PT   treating diabetes mellitus.
XX
PS   Example 4; SEQ ID NO 378; 24pp; English.
XX
CC   This invention relates to a novel albumin fusion protein having albumin
CC   or biological activity. Human serum albumin is responsible for a
CC   significant proportion of the osmotic pressure of serum and also
CC   functions as a carrier of endogenous and exogenous ligands. The fusion of
CC   albumin to a therapeutic protein may increase shelf-life and stability of
CC   the therapeutic protein. The albumin fusion protein of the invention may
CC   allow production of compositions with antidiabetic activity whilst the
CC   nucleotide sequence which encodes it may be useful for gene therapy. The
CC   albumin fusion protein is useful for preparing a composition for treating
CC   diabetes mellitus. The present sequence is the amino acid sequence of a
CC   novel full-length human albumin therapeutic fusion protein of the
CC   invention. Note: The sequence data for this patent did not form part of
CC   the printed specification, but was obtained in electronic format directly
CC   from WIPO at ftp.wipo.int/pub/publishedpct_sequences
XX
SQ   Sequence 777 AA;

  Query Match             100.0%;  Score 846;  DB 7;  Length 777;
  Best Local Similarity   100.0%;  Pred. No. 1.8e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 112
ADF15078
ID   ADF15078 standard; protein; 777 AA.
XX
AC   ADF15078;
XX
DT   12-FEB-2004  (first entry)
XX
DE   Human albumin therapeutic fusion protein SeqID374.
XX
KW   albumin fusion protein; albumin activity; human serum albumin;
KW   serum osmotic pressure; shelf-life; stability; antidiabetic;
KW   gene therapy; diabetes mellitus; human.
XX
OS   Chimeric.
OS   Homo sapiens.
XX
PN   WO2003060071-A2.
XX
PD   24-JUL-2003.
XX
PF   23-DEC-2002; 2002WO-US040891.
XX
PR   21-DEC-2001; 2001US-0341811P.
PR   24-JAN-2002; 2002US-0350358P.
PR   28-JAN-2002; 2002US-0351360P.
PR   26-FEB-2002; 2002US-0359370P.
PR   28-FEB-2002; 2002US-0360000P.
PR   27-MAR-2002; 2002US-0367500P.
PR   08-APR-2002; 2002US-0370227P.
PR   10-MAY-2002; 2002US-0378950P.
PR   24-MAY-2002; 2002US-0382617P.
PR   28-MAY-2002; 2002US-0383123P.
PR   05-JUN-2002; 2002US-0385708P.
PR   10-JUL-2002; 2002US-0394625P.
PR   24-JUL-2002; 2002US-0398008P.
PR   09-AUG-2002; 2002US-0402131P.
PR   13-AUG-2002; 2002US-0402708P.
PR   18-SEP-2002; 2002US-0411355P.
PR   18-SEP-2002; 2002US-0411426P.
PR   02-OCT-2002; 2002US-0414984P.
PR   11-OCT-2002; 2002US-0417611P.
PR   23-OCT-2002; 2002US-0420246P.
PR   05-NOV-2002; 2002US-0423623P.
XX
PA   (HUMA-) HUMAN GENOME SCI INC.
PA   (DELZ ) DELTA BIOTECHNOLOGY LTD.
```

PA (PRIN-) PRINCIPIA PHARM CORP.
XX
PI Ballance DJ, Turner AJ, Rosen CA, Haseltine WA;
XX
DR WPI; 2003-598517/56.
XX
PT New albumin fusion protein, useful for preparing a composition for
PT treating diabetes mellitus.
XX
PS Example 4; SEQ ID NO 374; 24pp; English.
XX
CC This invention relates to a novel albumin fusion protein having albumin
CC or biological activity. Human serum albumin is responsible for a
CC significant proportion of the osmotic pressure of serum and also
CC functions as a carrier of endogenous and exogenous ligands. The fusion of
CC albumin to a therapeutic protein may increase shelf-life and stability of
CC the therapeutic protein. The albumin fusion protein of the invention may
CC allow production of compositions with antidiabetic activity whilst the
CC nucleotide sequence which encodes it may be useful for gene therapy. The
CC albumin fusion protein is useful for preparing a composition for treating
CC diabetes mellitus. The present sequence is the amino acid sequence of a
CC novel full-length human albumin therapeutic fusion protein of the
CC invention. Note: The sequence data for this patent did not form part of
CC the printed specification, but was obtained in electronic format directly
CC from WIPO at ftp.wipo.int/pub/publishedpct_sequences
XX
SQ Sequence 777 AA;

Query Match 100.0%; Score 846; DB 7; Length 777;
Best Local Similarity 100.0%; Pred. No. 1.8e-85;
Matches 165; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
Db 28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy 61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
Db 88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy 121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
Db 148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192

RESULT 113
ADF15075
ID ADF15075 standard; protein; 777 AA.
XX
AC ADF15075;
XX
DT 12-FEB-2004 (first entry)
XX
DE Human albumin therapeutic fusion protein SeqID371.
XX
KW albumin fusion protein; albumin activity; human serum albumin;
KW serum osmotic pressure; shelf-life; stability; antidiabetic;
KW gene therapy; diabetes mellitus; human.
XX
OS Chimeric.
OS Homo sapiens.
XX
PN WO2003060071-A2.
XX
PD 24-JUL-2003.
XX
PF 23-DEC-2002; 2002WO-US040891.
XX
PR 21-DEC-2001; 2001US-0341811P.
PR 24-JAN-2002; 2002US-0350358P.
PR 28-JAN-2002; 2002US-0351360P.
PR 26-FEB-2002; 2002US-0359370P.
PR 28-FEB-2002; 2002US-0360000P.
PR 27-MAR-2002; 2002US-0367500P.
PR 08-APR-2002; 2002US-0370227P.
PR 10-MAY-2002; 2002US-0378950P.
PR 24-MAY-2002; 2002US-0382617P.
PR 28-MAY-2002; 2002US-0383123P.
PR 05-JUN-2002; 2002US-0385708P.
PR 10-JUL-2002; 2002US-0394625P.
PR 24-JUL-2002; 2002US-0398008P.
PR 09-AUG-2002; 2002US-0402131P.
PR 13-AUG-2002; 2002US-0402708P.
PR 18-SEP-2002; 2002US-0411355P.
PR 18-SEP-2002; 2002US-0411426P.
PR 02-OCT-2002; 2002US-0414984P.
PR 11-OCT-2002; 2002US-0417611P.
PR 23-OCT-2002; 2002US-0420246P.
PR 05-NOV-2002; 2002US-0423623P.
XX
PA (HUMA-) HUMAN GENOME SCI INC.
PA (DELZ) DELTA BIOTECHNOLOGY LTD.
PA (PRIN-) PRINCIPIA PHARM CORP.
XX
PI Ballance DJ, Turner AJ, Rosen CA, Haseltine WA;
XX
DR WPI; 2003-598517/56.
XX
PT New albumin fusion protein, useful for preparing a composition for
PT treating diabetes mellitus.
XX
PS Example 4; SEQ ID NO 371; 24pp; English.
XX
CC This invention relates to a novel albumin fusion protein having albumin
CC or biological activity. Human serum albumin is responsible for a
CC significant proportion of the osmotic pressure of serum and also
CC functions as a carrier of endogenous and exogenous ligands. The fusion of
CC albumin to a therapeutic protein may increase shelf-life and stability of
CC the therapeutic protein. The albumin fusion protein of the invention may
CC allow production of compositions with antidiabetic activity whilst the
CC nucleotide sequence which encodes it may be useful for gene therapy. The
CC albumin fusion protein is useful for preparing a composition for treating
CC diabetes mellitus. The present sequence is the amino acid sequence of a
CC novel full-length human albumin therapeutic fusion protein of the
CC invention. Note: The sequence data for this patent did not form part of
CC the printed specification, but was obtained in electronic format directly
CC from WIPO at ftp.wipo.int/pub/publishedpct_sequences
XX
SQ Sequence 777 AA;

Query Match 100.0%; Score 846; DB 7; Length 777;
Best Local Similarity 100.0%; Pred. No. 1.8e-85;
Matches 165; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
Db 28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy 61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
Db 88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy 121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
Db 148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192

RESULT 114
ADF15071
ID ADF15071 standard; protein; 777 AA.
XX
AC ADF15071;
XX
DT 12-FEB-2004 (first entry)
XX
DE Human albumin therapeutic fusion protein SeqID367.

```
XX
KW   albumin fusion protein; albumin activity; human serum albumin;
KW   serum osmotic pressure; shelf-life; stability; antidiabetic;
KW   gene therapy; diabetes mellitus; human.
XX
OS   Chimeric.
OS   Homo sapiens.
XX
PN   WO2003060071-A2.
XX
PD   24-JUL-2003.
XX
PF   23-DEC-2002; 2002WO-US040891.
XX
PR   21-DEC-2001; 2001US-0341811P.
PR   24-JAN-2002; 2002US-0350358P.
PR   28-JAN-2002; 2002US-0351360P.
PR   26-FEB-2002; 2002US-0359370P.
PR   28-FEB-2002; 2002US-0360000P.
PR   27-MAR-2002; 2002US-0367500P.
PR   08-APR-2002; 2002US-0370227P.
PR   10-MAY-2002; 2002US-0378950P.
PR   24-MAY-2002; 2002US-0382617P.
PR   28-MAY-2002; 2002US-0383123P.
PR   05-JUN-2002; 2002US-0385708P.
PR   10-JUL-2002; 2002US-0394625P.
PR   24-JUL-2002; 2002US-0398008P.
PR   09-AUG-2002; 2002US-0402131P.
PR   13-AUG-2002; 2002US-0402708P.
PR   18-SEP-2002; 2002US-0411355P.
PR   18-SEP-2002; 2002US-0411426P.
PR   02-OCT-2002; 2002US-0414984P.
PR   11-OCT-2002; 2002US-0417611P.
PR   23-OCT-2002; 2002US-0420246P.
PR   05-NOV-2002; 2002US-0423623P.
XX
PA   (HUMA-) HUMAN GENOME SCI INC.
PA   (DELZ ) DELTA BIOTECHNOLOGY LTD.
PA   (PRIN-) PRINCIPIA PHARM CORP.
XX
PI   Ballance DJ,  Turner AJ,  Rosen CA,  Haseltine WA;
XX
DR   WPI; 2003-598517/56.
XX
PT   New albumin fusion protein, useful for preparing a composition for
PT   treating diabetes mellitus.
XX
PS   Example 4; SEQ ID NO 367; 24pp; English.
XX
CC   This invention relates to a novel albumin fusion protein having albumin
CC   or biological activity. Human serum albumin is responsible for a
CC   significant proportion of the osmotic pressure of serum and also
CC   functions as a carrier of endogenous and exogenous ligands. The fusion of
CC   albumin to a therapeutic protein may increase shelf-life and stability of
CC   the therapeutic protein. The albumin fusion protein of the invention may
CC   allow production of compositions with antidiabetic activity whilst the
CC   nucleotide sequence which encodes it may be useful for gene therapy. The
CC   albumin fusion protein is useful for preparing a composition for treating
CC   diabetes mellitus. The present sequence is the amino acid sequence of a
CC   novel full-length human albumin therapeutic fusion protein of the
CC   invention. Note: The sequence data for this patent did not form part of
CC   the printed specification, but was obtained in electronic format directly
CC   from WIPO at ftp.wipo.int/pub/publishedpct_sequences
XX
SQ   Sequence 777 AA;

  Query Match             100.0%;  Score 846;  DB 7;  Length 777;
  Best Local Similarity   100.0%;  Pred. No. 1.8e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 115
ADF15079
ID   ADF15079 standard; protein; 777 AA.
XX
AC   ADF15079;
XX
DT   12-FEB-2004  (first entry)
XX
DE   Human albumin therapeutic fusion protein SeqID375.
XX
KW   albumin fusion protein; albumin activity; human serum albumin;
KW   serum osmotic pressure; shelf-life; stability; antidiabetic;
KW   gene therapy; diabetes mellitus; human.
XX
OS   Chimeric.
OS   Homo sapiens.
XX
PN   WO2003060071-A2.
XX
PD   24-JUL-2003.
XX
PF   23-DEC-2002; 2002WO-US040891.
XX
PR   21-DEC-2001; 2001US-0341811P.
PR   24-JAN-2002; 2002US-0350358P.
PR   28-JAN-2002; 2002US-0351360P.
PR   26-FEB-2002; 2002US-0359370P.
PR   28-FEB-2002; 2002US-0360000P.
PR   27-MAR-2002; 2002US-0367500P.
PR   08-APR-2002; 2002US-0370227P.
PR   10-MAY-2002; 2002US-0378950P.
PR   24-MAY-2002; 2002US-0382617P.
PR   28-MAY-2002; 2002US-0383123P.
PR   05-JUN-2002; 2002US-0385708P.
PR   10-JUL-2002; 2002US-0394625P.
PR   24-JUL-2002; 2002US-0398008P.
PR   09-AUG-2002; 2002US-0402131P.
PR   13-AUG-2002; 2002US-0402708P.
PR   18-SEP-2002; 2002US-0411355P.
PR   18-SEP-2002; 2002US-0411426P.
PR   02-OCT-2002; 2002US-0414984P.
PR   11-OCT-2002; 2002US-0417611P.
PR   23-OCT-2002; 2002US-0420246P.
PR   05-NOV-2002; 2002US-0423623P.
XX
PA   (HUMA-) HUMAN GENOME SCI INC.
PA   (DELZ ) DELTA BIOTECHNOLOGY LTD.
PA   (PRIN-) PRINCIPIA PHARM CORP.
XX
PI   Ballance DJ,  Turner AJ,  Rosen CA,  Haseltine WA;
XX
DR   WPI; 2003-598517/56.
XX
PT   New albumin fusion protein, useful for preparing a composition for
PT   treating diabetes mellitus.
XX
PS   Example 4; SEQ ID NO 375; 24pp; English.
XX
CC   This invention relates to a novel albumin fusion protein having albumin
CC   or biological activity. Human serum albumin is responsible for a
CC   significant proportion of the osmotic pressure of serum and also
CC   functions as a carrier of endogenous and exogenous ligands. The fusion of
CC   albumin to a therapeutic protein may increase shelf-life and stability of
```

```
CC   the therapeutic protein. The albumin fusion protein of the invention may
CC   allow production of compositions with antidiabetic activity whilst the
CC   nucleotide sequence which encodes it may be useful for gene therapy. The
CC   albumin fusion protein is useful for preparing a composition for treating
CC   diabetes mellitus. The present sequence is the amino acid sequence of a
CC   novel full-length human albumin therapeutic fusion protein of the
CC   invention. Note: The sequence data for this patent did not form part of
CC   the printed specification, but was obtained in electronic format directly
CC   from WIPO at ftp.wipo.int/pub/publishedpct_sequences
XX
SQ   Sequence 777 AA;

  Query Match             100.0%;  Score 846;  DB 7;  Length 777;
  Best Local Similarity   100.0%;  Pred. No. 1.8e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 116
ADF15081
ID   ADF15081 standard; protein; 777 AA.
XX
AC   ADF15081;
XX
DT   12-FEB-2004  (first entry)
XX
DE   Human albumin therapeutic fusion protein SeqID377.
XX
KW   albumin fusion protein; albumin activity; human serum albumin;
KW   serum osmotic pressure; shelf-life; stability; antidiabetic;
KW   gene therapy; diabetes mellitus; human.
XX
OS   Chimeric.
OS   Homo sapiens.
XX
PN   WO2003060071-A2.
XX
PD   24-JUL-2003.
XX
PF   23-DEC-2002; 2002WO-US040891.
XX
PR   21-DEC-2001; 2001US-0341811P.
PR   24-JAN-2002; 2002US-0350358P.
PR   28-JAN-2002; 2002US-0351360P.
PR   26-FEB-2002; 2002US-0359370P.
PR   28-FEB-2002; 2002US-0360000P.
PR   27-MAR-2002; 2002US-0367500P.
PR   08-APR-2002; 2002US-0370227P.
PR   10-MAY-2002; 2002US-0378950P.
PR   24-MAY-2002; 2002US-0382617P.
PR   28-MAY-2002; 2002US-0383123P.
PR   05-JUN-2002; 2002US-0385708P.
PR   10-JUL-2002; 2002US-0394625P.
PR   24-JUL-2002; 2002US-0398008P.
PR   09-AUG-2002; 2002US-0402131P.
PR   13-AUG-2002; 2002US-0402708P.
PR   18-SEP-2002; 2002US-0411355P.
PR   18-SEP-2002; 2002US-0411426P.
PR   02-OCT-2002; 2002US-0414984P.
PR   11-OCT-2002; 2002US-0417611P.
PR   23-OCT-2002; 2002US-0420246P.
PR   05-NOV-2002; 2002US-0423623P.
XX
PA   (HUMA-) HUMAN GENOME SCI INC.
PA   (DELZ ) DELTA BIOTECHNOLOGY LTD.
PA   (PRIN-) PRINCIPIA PHARM CORP.
XX
PI   Ballance DJ,  Turner AJ,  Rosen CA,  Haseltine WA;
XX
DR   WPI; 2003-598517/56.
XX
PT   New albumin fusion protein, useful for preparing a composition for
PT   treating diabetes mellitus.
XX
PS   Example 4; SEQ ID NO 377; 24pp; English.
XX
CC   This invention relates to a novel albumin fusion protein having albumin
CC   or biological activity. Human serum albumin is responsible for a
CC   significant proportion of the osmotic pressure of serum and also
CC   functions as a carrier of endogenous and exogenous ligands. The fusion of
CC   albumin to a therapeutic protein may increase shelf-life and stability of
CC   the therapeutic protein. The albumin fusion protein of the invention may
CC   allow production of compositions with antidiabetic activity whilst the
CC   nucleotide sequence which encodes it may be useful for gene therapy. The
CC   albumin fusion protein is useful for preparing a composition for treating
CC   diabetes mellitus. The present sequence is the amino acid sequence of a
CC   novel full-length human albumin therapeutic fusion protein of the
CC   invention. Note: The sequence data for this patent did not form part of
CC   the printed specification, but was obtained in electronic format directly
CC   from WIPO at ftp.wipo.int/pub/publishedpct_sequences
XX
SQ   Sequence 777 AA;

  Query Match             100.0%;  Score 846;  DB 7;  Length 777;
  Best Local Similarity   100.0%;  Pred. No. 1.8e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 117
ADF15113
ID   ADF15113 standard; protein; 951 AA.
XX
AC   ADF15113;
XX
DT   12-FEB-2004  (first entry)
XX
DE   Human albumin therapeutic fusion protein SeqID409.
XX
KW   albumin fusion protein; albumin activity; human serum albumin;
KW   serum osmotic pressure; shelf-life; stability; antidiabetic;
KW   gene therapy; diabetes mellitus; human.
XX
OS   Chimeric.
OS   Homo sapiens.
XX
PN   WO2003060071-A2.
XX
PD   24-JUL-2003.
XX
PF   23-DEC-2002; 2002WO-US040891.
XX
PR   21-DEC-2001; 2001US-0341811P.
PR   24-JAN-2002; 2002US-0350358P.
```

PR 28-JAN-2002; 2002US-0351360P.
PR 26-FEB-2002; 2002US-0359370P.
PR 28-FEB-2002; 2002US-0360000P.
PR 27-MAR-2002; 2002US-0367500P.
PR 08-APR-2002; 2002US-0370227P.
PR 10-MAY-2002; 2002US-0378950P.
PR 24-MAY-2002; 2002US-0382617P.
PR 28-MAY-2002; 2002US-0383123P.
PR 05-JUN-2002; 2002US-0385708P.
PR 10-JUL-2002; 2002US-0394625P.
PR 24-JUL-2002; 2002US-0398008P.
PR 09-AUG-2002; 2002US-0402131P.
PR 13-AUG-2002; 2002US-0402708P.
PR 18-SEP-2002; 2002US-0411355P.
PR 18-SEP-2002; 2002US-0411426P.
PR 02-OCT-2002; 2002US-0414984P.
PR 11-OCT-2002; 2002US-0417611P.
PR 23-OCT-2002; 2002US-0420246P.
PR 05-NOV-2002; 2002US-0423623P.
XX
PA (HUMA-) HUMAN GENOME SCI INC.
PA (DELZ) DELTA BIOTECHNOLOGY LTD.
PA (PRIN-) PRINCIPIA PHARM CORP.
XX
PI Ballance DJ, Turner AJ, Rosen CA, Haseltine WA;
XX
DR WPI; 2003-598517/56.
XX
PT New albumin fusion protein, useful for preparing a composition for
PT treating diabetes mellitus.
XX
PS Example 4; SEQ ID NO 409; 24pp; English.
XX
CC This invention relates to a novel albumin fusion protein having albumin
CC or biological activity. Human serum albumin is responsible for a
CC significant proportion of the osmotic pressure of serum and also
CC functions as a carrier of endogenous and exogenous ligands. The fusion of
CC albumin to a therapeutic protein may increase shelf-life and stability of
CC the therapeutic protein. The albumin fusion protein of the invention may
CC allow production of compositions with antidiabetic activity whilst the
CC nucleotide sequence which encodes it may be useful for gene therapy. The
CC albumin fusion protein is useful for preparing a composition for treating
CC diabetes mellitus. The present sequence is the amino acid sequence of a
CC novel full-length human albumin therapeutic fusion protein of the
CC invention. Note: The sequence data for this patent did not form part of
CC the printed specification, but was obtained in electronic format directly
CC from WIPO at ftp.wipo.int/pub/publishedpct_sequences
XX
SQ Sequence 951 AA;

Query Match 100.0%; Score 846; DB 7; Length 951;
Best Local Similarity 100.0%; Pred. No. 2.5e-85;
Matches 165; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db 28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy 61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db 88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy 121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
|||||||||||||||||||||||||||||||||||||||||||||
Db 148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192

RESULT 118
ADF15108
ID ADF15108 standard; protein; 951 AA.
XX
AC ADF15108;
XX
DT 12-FEB-2004 (first entry)
XX
DE Human albumin therapeutic fusion protein SeqID404.
XX
KW albumin fusion protein; albumin activity; human serum albumin;
KW serum osmotic pressure; shelf-life; stability; antidiabetic;
KW gene therapy; diabetes mellitus; human.
XX
OS Chimeric.
OS Homo sapiens.
XX
PN WO2003060071-A2.
XX
PD 24-JUL-2003.
XX
PF 23-DEC-2002; 2002WO-US040891.
XX
PR 21-DEC-2001; 2001US-0341811P.
PR 24-JAN-2002; 2002US-0350358P.
PR 28-JAN-2002; 2002US-0351360P.
PR 26-FEB-2002; 2002US-0359370P.
PR 28-FEB-2002; 2002US-0360000P.
PR 27-MAR-2002; 2002US-0367500P.
PR 08-APR-2002; 2002US-0370227P.
PR 10-MAY-2002; 2002US-0378950P.
PR 24-MAY-2002; 2002US-0382617P.
PR 28-MAY-2002; 2002US-0383123P.
PR 05-JUN-2002; 2002US-0385708P.
PR 10-JUL-2002; 2002US-0394625P.
PR 24-JUL-2002; 2002US-0398008P.
PR 09-AUG-2002; 2002US-0402131P.
PR 13-AUG-2002; 2002US-0402708P.
PR 18-SEP-2002; 2002US-0411355P.
PR 18-SEP-2002; 2002US-0411426P.
PR 02-OCT-2002; 2002US-0414984P.
PR 11-OCT-2002; 2002US-0417611P.
PR 23-OCT-2002; 2002US-0420246P.
PR 05-NOV-2002; 2002US-0423623P.
XX
PA (HUMA-) HUMAN GENOME SCI INC.
PA (DELZ) DELTA BIOTECHNOLOGY LTD.
PA (PRIN-) PRINCIPIA PHARM CORP.
XX
PI Ballance DJ, Turner AJ, Rosen CA, Haseltine WA;
XX
DR WPI; 2003-598517/56.
XX
PT New albumin fusion protein, useful for preparing a composition for
PT treating diabetes mellitus.
XX
PS Example 4; SEQ ID NO 404; 24pp; English.
XX
CC This invention relates to a novel albumin fusion protein having albumin
CC or biological activity. Human serum albumin is responsible for a
CC significant proportion of the osmotic pressure of serum and also
CC functions as a carrier of endogenous and exogenous ligands. The fusion of
CC albumin to a therapeutic protein may increase shelf-life and stability of
CC the therapeutic protein. The albumin fusion protein of the invention may
CC allow production of compositions with antidiabetic activity whilst the
CC nucleotide sequence which encodes it may be useful for gene therapy. The
CC albumin fusion protein is useful for preparing a composition for treating
CC diabetes mellitus. The present sequence is the amino acid sequence of a
CC novel full-length human albumin therapeutic fusion protein of the
CC invention. Note: The sequence data for this patent did not form part of
CC the printed specification, but was obtained in electronic format directly
CC from WIPO at ftp.wipo.int/pub/publishedpct_sequences
XX
SQ Sequence 951 AA;

Query Match 100.0%; Score 846; DB 7; Length 951;
Best Local Similarity 100.0%; Pred. No. 2.5e-85;
Matches 165; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```
Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 119
ADF15105
ID   ADF15105 standard; protein; 954 AA.
XX
AC   ADF15105;
XX
DT   12-FEB-2004  (first entry)
XX
DE   Human albumin therapeutic fusion protein SeqID401.
XX
KW   albumin fusion protein; albumin activity; human serum albumin;
KW   serum osmotic pressure; shelf-life; stability; antidiabetic;
KW   gene therapy; diabetes mellitus; human.
XX
OS   Chimeric.
OS   Homo sapiens.
XX
PN   WO2003060071-A2.
XX
PD   24-JUL-2003.
XX
PF   23-DEC-2002; 2002WO-US040891.
XX
PR   21-DEC-2001; 2001US-0341811P.
PR   24-JAN-2002; 2002US-0350358P.
PR   28-JAN-2002; 2002US-0351360P.
PR   26-FEB-2002; 2002US-0359370P.
PR   28-FEB-2002; 2002US-0360000P.
PR   27-MAR-2002; 2002US-0367500P.
PR   08-APR-2002; 2002US-0370227P.
PR   10-MAY-2002; 2002US-0378950P.
PR   24-MAY-2002; 2002US-0382617P.
PR   28-MAY-2002; 2002US-0383123P.
PR   05-JUN-2002; 2002US-0385708P.
PR   10-JUL-2002; 2002US-0394625P.
PR   24-JUL-2002; 2002US-0398008P.
PR   09-AUG-2002; 2002US-0402131P.
PR   13-AUG-2002; 2002US-0402708P.
PR   18-SEP-2002; 2002US-0411355P.
PR   18-SEP-2002; 2002US-0411426P.
PR   02-OCT-2002; 2002US-0414984P.
PR   11-OCT-2002; 2002US-0417611P.
PR   23-OCT-2002; 2002US-0420246P.
PR   05-NOV-2002; 2002US-0423623P.
XX
PA   (HUMA-) HUMAN GENOME SCI INC.
PA   (DELZ ) DELTA BIOTECHNOLOGY LTD.
PA   (PRIN-) PRINCIPIA PHARM CORP.
XX
PI   Ballance DJ,  Turner AJ,  Rosen CA,  Haseltine WA;
XX
DR   WPI; 2003-598517/56.
XX
PT   New albumin fusion protein, useful for preparing a composition for
PT   treating diabetes mellitus.
XX
PS   Example 4; SEQ ID NO 401; 24pp; English.
XX
CC   This invention relates to a novel albumin fusion protein having albumin
CC   or biological activity. Human serum albumin is responsible for a
CC   significant proportion of the osmotic pressure of serum and also
CC   functions as a carrier of endogenous and exogenous ligands. The fusion of
CC   albumin to a therapeutic protein may increase shelf-life and stability of
CC   the therapeutic protein. The albumin fusion protein of the invention may
CC   allow production of compositions with antidiabetic activity whilst the
CC   nucleotide sequence which encodes it may be useful for gene therapy. The
CC   albumin fusion protein is useful for preparing a composition for treating
CC   diabetes mellitus. The present sequence is the amino acid sequence of a
CC   novel full-length human albumin therapeutic fusion protein of the
CC   invention. Note: The sequence data for this patent did not form part of
CC   the printed specification, but was obtained in electronic format directly
CC   from WIPO at ftp.wipo.int/pub/publishedpct_sequences
XX
SQ   Sequence 954 AA;

  Query Match             100.0%;  Score 846;  DB 7;  Length 954;
  Best Local Similarity   100.0%;  Pred. No. 2.5e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        790 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 849

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        850 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 909

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        910 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 954


Search completed: August 23, 2005, 14:20:24
Job time : 83 secs
```

THIS PAGE BLANK (USPTO)

GenCore version 5.1.6
Copyright (c) 1993 - 2005 Compugen Ltd.

OM protein - protein search, using sw model

Run on: August 23, 2005, 13:52:31 ; Search time 178 Seconds
(without alignments)
474.680 Million cell updates/sec

Title: US-10-706-701-1
Perfect score: 846
Sequence: 1 APPRLICDSRVLERYLLEAK.....SNFLRGKLKLYTGEACRTGD 165

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 1612378 seqs, 512079187 residues

Total number of hits satisfying chosen parameters: 1612378

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : UniProt_03:*
1: uniprot_sprot:*
2: uniprot_trembl:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Query Match	Length	DB	ID	Description
1	846	100.0	193	1	EPO_HUMAN	P01588 homo sapien
2	764.5	90.4	192	1	EPO_MACFA	P07865 macaca fasc
3	759.5	89.8	192	1	EPO_MACMU	Q28513 macaca mula
4	723	85.5	192	2	Q867B1	Q867b1 equus cabal
5	706	83.5	192	1	EPO_FELCA	P33708 felis silve
6	701	82.9	192	1	EPO_RAT	P29676 rattus norv
7	693	81.9	206	2	Q6PWU5	Q6pwu5 canis famil
8	692.5	81.9	192	1	EPO_BOVIN	P48617 bos taurus
9	689	81.4	192	1	EPO_MOUSE	P07321 mus musculu
10	685.5	81.0	194	1	EPO_SHEEP	P33709 ovis aries
11	680.5	80.4	195	2	Q9GKA2	Q9gka2 oryctolagus
12	680.5	80.4	195	2	Q9GKA3	Q9gka3 oryctolagus
13	678	80.1	190	1	EPO_PIG	P49157 sus scrofa
14	678	80.1	192	2	Q6H8S9	Q6h8s9 spalax gali
15	678	80.1	192	2	Q6H8T0	Q6h8t0 spalax juda
16	678	80.1	192	2	Q6H8T1	Q6h8t1 spalax carm
17	678	80.1	194	2	Q9MYM8	Q9mym8 sus scrofa
18	674	79.7	192	2	Q6H8T2	Q6h8t2 spalax gola
19	663	78.4	133	2	Q8HZ88	Q8hz88 gorilla gor
20	658	77.8	133	2	Q8HZ89	Q8hz89 pan troglod
21	638	75.4	175	1	EPO_CANFA	P33707 canis famil
22	627	74.1	131	2	Q8HZ87	Q8hz87 pongo pygma
23	607	71.7	133	2	Q8HZ86	Q8hz86 macaca sp.
24	554	65.5	133	2	Q8HZ85	Q8hz85 saguinus oe
25	241	28.5	195	2	Q6UAM1	Q6uam1 tetraodon n
26	238	28.1	182	2	Q6JV23	Q6jv23 fugu rubrip
27	238	28.1	185	2	Q6JV22	Q6jv22 fugu rubrip
28	188	22.2	50	2	Q9QV40	Q9qv40 rattus sp.
29	113	13.4	177	2	Q6IYE9	Q6iye9 gallus gall
30	109	12.9	352	1	TPO_CANFA	P42705 canis famil
31	89	10.5	353	1	TPO_HUMAN	P40225 homo sapien
32	88	10.4	323	2	Q667N4	Q667n4 yersinia ps
33	88	10.4	323	2	Q8ZDC8	Q8zdc8 yersinia pe
34	87.5	10.3	346	2	Q8Z2M5	Q8z2m5 salmonella
35	87.5	10.3	346	2	Q8ZKZ4	Q8zkz4 salmonella
36	87.5	10.3	432	2	Q7QDZ2	Q7qdz2 anopheles g
37	85	10.0	3722	2	P94873	P94873 lysobacter
38	83	9.8	296	2	Q8ZAY4	Q8zay4 yersinia pe
39	83	9.8	301	2	Q7PKU0	Q7pku0 anopheles g
40	83	9.8	339	1	MURB_PSEAE	Q9hzm7 pseudomonas
41	82.5	9.8	154	2	Q87AY9	Q87ay9 xylella fas
42	82.5	9.8	558	2	Q7ZUK7	Q7zuk7 brachydanio
43	82.5	9.8	3033	2	Q9DHD6	Q9dhd6 hepatitis c
44	82	9.7	548	1	CH60_BUCPP	Q8kix4 buchnera ap
45	82	9.7	815	2	Q9FK91	Q9fk91 arabidopsis

ALIGNMENTS

RESULT 1
EPO_HUMAN
ID EPO_HUMAN STANDARD; PRT; 193 AA.
AC P01588; Q9UDZ0; Q9UEZ5; Q9UHA0;
DT 21-JUL-1986 (Rel. 01, Created)
DT 21-JUL-1986 (Rel. 01, Last sequence update)
DT 25-OCT-2004 (Rel. 45, Last annotation update)
DE Erythropoietin precursor (Epoetin).
GN Name=EPO;
OS Homo sapiens (Human).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
OX NCBI_TaxID=9606;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=85137899; PubMed=3838366;
RA Jacobs K., Shoemaker C., Rudersdorf R., Neill S.D., Kaufman R.J.,
RA Mufson A., Seehra J., Jones S.S., Hewick R., Fritsch E.F.,
RA Kawakita M., Shimizu T., Miyake T.;
RT "Isolation and characterization of genomic and cDNA clones of human erythropoietin.";
RL Nature 313:806-810(1985).
RN [2]
RP SEQUENCE FROM N.A.
RX MEDLINE=86067948; PubMed=3865178;
RA Lin F.-K., Suggs S., Lin C.-H., Browne J.K., Smalling R., Egrie J.C.,
RA Chen K.K., Fox G.M., Martin F., Stabinsky Z., Badrawi S.M., Lai P.-H.,
RA Goldwasser E.;
RT "Cloning and expression of the human erythropoietin gene.";
RL Proc. Natl. Acad. Sci. U.S.A. 82:7580-7584(1985).
RN [3]
RP SEQUENCE FROM N.A.
RX MEDLINE=99018118; PubMed=9799793;
RA Gloeckner G., Scherer S., Schattevoy R., Boright A.P., Weber J.,
RA Tsui L.-C., Rosenthal A.;
RT "Large-scale sequencing of two regions in human chromosome 7q22: analysis of 650 kb of genomic sequence around the EPO and CUTL1 loci reveals 17 genes.";
RL Genome Res. 8:1060-1073(1998).
RN [4]
RP SEQUENCE FROM N.A.
RA Rupert J.L., Hochachka P.W.;
RT "Erythropoietin gene sequence in the Quechua, a high altitude native population.";
RL Submitted (NOV-1999) to the EMBL/GenBank/DDBJ databases.
RN [5]
RP SEQUENCE OF 58-193 FROM N.A., AND VARIANTS HEPATOCELLULAR CARCINOMA
RP 131-ASN-PHE-132 AND GLN-149.
RX MEDLINE=93384593; PubMed=8396923;
RA Funakoshi A., Muta H., Baba T., Shimizu S.;
RT "Gene expression of mutant erythropoietin in hepatocellular carcinoma.";
RL Biochem. Biophys. Res. Commun. 195:717-722(1993).
RN [6]

```
RP   SEQUENCE OF 28-193, AND DISULFIDE BONDS.
RC   TISSUE=Urine;
RX   MEDLINE=86140080; PubMed=3949763;
RA   Lai P.H., Everett R., Wang F.F., Arakawa T., Goldwasser E.;
RT   "Structural characterization of human erythropoietin.";
RL   J. Biol. Chem. 261:3116-3121(1986).
RN   [7]
RP   PRELIMINARY SEQUENCE OF 28-57.
RX   MEDLINE=84135751; PubMed=6698989;
RA   Yanagawa S., Hirade K., Ohnota H., Sasaki R., Chiba H., Ueda M.,
RA   Goto M.;
RT   "Isolation of human erythropoietin with monoclonal antibodies.";
RL   J. Biol. Chem. 259:2707-2710(1984).
RN   [8]
RP   STRUCTURE OF CARBOHYDRATES.
RX   MEDLINE=88153657; PubMed=3346214;
RA   Takeuchi M., Takasaki S., Miyazaki H., Kato T., Hoshi S., Kochibe N.,
RA   Kobata A.;
RT   "Comparative study of the asparagine-linked sugar chains of human
RT   erythropoietins purified from urine and the culture medium of
RT   recombinant Chinese hamster ovary cells.";
RL   J. Biol. Chem. 263:3657-3663(1988).
RN   [9]
RP   STRUCTURE OF CARBOHYDRATES.
RX   MEDLINE=89118279; PubMed=3219367;
RA   Sasaki H., Ochi N., Dell A., Fukuda M.;
RT   "Site-specific glycosylation of human recombinant erythropoietin:
RT   analysis of glycopeptides or peptides at each glycosylation site by
RT   fast atom bombardment mass spectrometry.";
RL   Biochemistry 27:8618-8626(1988).
RN   [10]
RP   STRUCTURE OF CARBOHYDRATES.
RX   MEDLINE=92314463; PubMed=1820196;
RA   Takeuchi M., Kobata A.;
RT   "Structures and functional roles of the sugar chains of human
RT   erythropoietins.";
RL   Glycobiology 1:337-346(1991).
RN   [11]
RP   X-RAY CRYSTALLOGRAPHY (1.9 ANGSTROMS).
RX   MEDLINE=98445092; PubMed=9774108; DOI=10.1038/26773;
RA   Syed R.S., Reid S.W., Li C., Cheetham J.C., Aoki K.H., Liu B.,
RA   Zhan H., Osslund T.D., Chirino A.J., Zhang J., Finer-Moore J.,
RA   Elliott S., Sitney K., Katz B.A., Matthews D.J., Wendoloski J.J.,
RA   Egrie J., Stroud R.M.;
RT   "Efficiency of signalling through cytokine receptors depends
RT   critically on receptor orientation.";
RL   Nature 395:511-516(1998).
CC   -!- FUNCTION: Erythropoietin is the principal hormone involved in the
CC       regulation of erythrocyte differentiation and the maintenance of a
CC       physiological level of circulating erythrocyte mass.
CC   -!- SUBCELLULAR LOCATION: Secreted.
CC   -!- TISSUE SPECIFICITY: Produced by kidney or liver of adult mammals
CC       and by liver of fetal or neonatal mammals.
CC   -!- PHARMACEUTICAL: Used for the treatment of anemia. Available under
CC       the names Epogen (Amgen), Epogin (Chugai), Epomax (Elanex), Eprex
CC       (Janssen-Cilag), NeoRecormon or Recormon (Roche), and Procrit
CC       (Ortho Biotech). Variations in the glycosylation pattern of EPO
CC       distinguishes these products. Epogen, Epogin, Eprex and Procrit
CC       are generically known as epoetin alfa, NeoRecormon and Recormon as
CC       epoetin beta and Epomax as epoetin omega.
CC   -!- SIMILARITY: Belongs to the EPO / TPO family.
CC   -!- DATABASE: NAME=R&D Systems' cytokine source book: EPO;
CC       WWW="http://www.rndsystems.com/asp/g_sitebuilder.asp?bodyId=197".
CC   ---------------------------------------------------------------------
CC   This SWISS-PROT entry is copyright. It is produced through a collaboration
CC   between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC   the European Bioinformatics Institute. There are no restrictions on its
CC   use by non-profit institutions as long as its content is in no way
CC   modified and this statement is not removed. Usage by and for commercial
CC   entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; X02158; CAA26095.1; -.
DR   EMBL; X02157; CAA26094.1; -.
DR   EMBL; M11319; AAA52400.1; -.
DR   EMBL; AF053356; AAC78791.1; -.
DR   EMBL; AF202308; AAF23132.1; -.
DR   EMBL; AF202306; AAF23132.1; JOINED.
DR   EMBL; AF202307; AAF23132.1; JOINED.
DR   EMBL; AF202310; AAF23133.1; -.
DR   EMBL; AF202309; AAF23133.1; JOINED.
DR   EMBL; AF202311; AAF17572.1; -.
DR   EMBL; AF202314; AAF23134.1; -.
DR   EMBL; AF202312; AAF23134.1; JOINED.
DR   EMBL; AF202313; AAF23134.1; JOINED.
DR   EMBL; S65458; AAD13964.1; -.
DR   PIR; A01855; ZUHU.
DR   PDB; 1BUY; NMR; A=28-193.
DR   PDB; 1CN4; X-ray; C=28-193.
DR   PDB; 1EER; X-ray; A=28-193.
DR   GlycoSuiteDB; P01588; -.
DR   Genew; HGNC:3415; EPO.
DR   MIM; 133170; -.
DR   GO; GO:0005615; C:extracellular space; TAS.
DR   GO; GO:0006950; P:response to stress; TAS.
DR   InterPro; IPR009079; 4_helix_cytokine.
DR   InterPro; IPR001323; EPO_TPO.
DR   InterPro; IPR003013; Erythroptn.
DR   Pfam; PF00758; EPO_TPO; 1.
DR   PIRSF; PIRSF001951; EPO; 1.
DR   PRINTS; PR00272; ERYTHROPTN.
DR   PROSITE; PS00817; EPO_TPO; 1.
KW   3D-structure; Direct protein sequencing; Erythrocyte maturation;
KW   Glycoprotein; Hormone; Pharmaceutical; Polymorphism; Signal.
FT   SIGNAL        1     27
FT   CHAIN        28    193       Erythropoietin.
FT   PROPEP      190    193       Removed in mature form (Probable).
FT   DISULFID     34    188
FT   DISULFID     56     60
FT   CARBOHYD     51     51       N-linked (GlcNAc. . .).
FT                                /FTId=CAR_000052.
FT   CARBOHYD     65     65       N-linked (GlcNAc. . .).
FT                                /FTId=CAR_000166.
FT   CARBOHYD    110    110       N-linked (GlcNAc. . .).
FT                                /FTId=CAR_000192.
FT   CARBOHYD    153    153       O-linked (GalNAc. . .).
FT   VARIANT     131    132       SL -> NF (in an hepatocellular
FT                                carcinoma).
FT                                /FTId=VAR_009870.
FT   VARIANT     149    149       P -> Q (in an hepatocellular carcinoma).
FT                                /FTId=VAR_009871.
FT   CONFLICT     40     40       E -> Q (in Ref. 1; CAA26095).
FT   CONFLICT     85     85       Q -> QQ (in Ref. 5).
FT   CONFLICT    140    140       G -> R (in Ref. 1; CAA26095).
FT   HELIX        32     34
FT   HELIX        36     52
FT   HELIX        53     55
FT   TURN         57     58
FT   STRAND       61     68
FT   STRAND       73     73
FT   HELIX        75     78
FT   TURN         79     80
FT   HELIX        83    109
FT   HELIX       118    138
FT   TURN        139    140
FT   HELIX       141    147
FT   TURN        148    149
FT   STRAND      160    164
FT   HELIX       165    177
FT   TURN        178    178
FT   HELIX       179    188
SQ   SEQUENCE   193 AA;  21306 MW;  C91F0E4C26A52033 CRC64;

  Query Match             100.0%;  Score 846;  DB 1;  Length 193;
  Best Local Similarity   100.0%;  Pred. No. 2.1e-71;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;
```

```
Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192
```

```
RESULT 2
EPO_MACFA
ID   EPO_MACFA      STANDARD;      PRT;   192 AA.
AC   P07865;
DT   01-AUG-1988 (Rel. 08, Created)
DT   01-AUG-1988 (Rel. 08, Last sequence update)
DT   25-OCT-2004 (Rel. 45, Last annotation update)
DE   Erythropoietin precursor.
GN   Name=EPO;
OS   Macaca fascicularis (Crab eating macaque) (Cynomolgus monkey).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Catarrhini; Cercopithecidae;
OC   Cercopithecinae; Macaca.
OX   NCBI_TaxID=9541;
RN   [1]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=87055236; PubMed=2877922; DOI=10.1016/0378-1119(86)90183-6;
RA   Lin F.-K., Lin C.-H., Lai P.-H., Browne J.K., Egrie J.C., Smalling R.,
RA   Fox G.M., Chen K.K., Castro M., Suggs S.;
RT   "Monkey erythropoietin gene: cloning, expression and comparison with
RT   the human erythropoietin gene.";
RL   Gene 44:201-209(1986).
CC   -!- FUNCTION: Erythropoietin is the principal hormone involved in the
CC       regulation of erythrocyte differentiation and the maintenance of a
CC       physiological level of circulating erythrocyte mass.
CC   -!- SUBCELLULAR LOCATION: Secreted.
CC   -!- TISSUE SPECIFICITY: Produced by kidney or liver of adult mammals
CC       and by liver of fetal or neonatal mammals.
CC   -!- SIMILARITY: Belongs to the EPO / TPO family.
CC   ---------------------------------------------------------------------
CC   This SWISS-PROT entry is copyright. It is produced through a collaboration
CC   between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC   the European Bioinformatics Institute. There are no restrictions on its
CC   use by non-profit institutions as long as its content is in no way
CC   modified and this statement is not removed. Usage by and for commercial
CC   entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; M18189; AAA36841.1; -.
DR   PIR; JQ0173; JQ0173.
DR   HSSP; P01588; 1CN4.
DR   InterPro; IPR009079; 4_helix_cytokine.
DR   InterPro; IPR001323; EPO_TPO.
DR   InterPro; IPR003013; Erythroptn.
DR   Pfam; PF00758; EPO_TPO; 1.
DR   PIRSF; PIRSF001951; EPO; 1.
DR   PRINTS; PR00272; ERYTHROPTN.
DR   PROSITE; PS00817; EPO_TPO; 1.
KW   Erythrocyte maturation; Glycoprotein; Hormone; Signal.
FT   SIGNAL       1     27       By similarity.
FT   CHAIN       28    192       Erythropoietin.
FT   DISULFID    34    187       By similarity.
FT   DISULFID    56     60       By similarity.
FT   CARBOHYD    51     51       N-linked (GlcNAc. . .) (By similarity).
FT   CARBOHYD    65     65       N-linked (GlcNAc. . .) (By similarity).
FT   CARBOHYD   110    110       N-linked (GlcNAc. . .) (By similarity).
FT   CARBOHYD   152    152       O-linked (GalNAc. . .) (By similarity).
SQ   SEQUENCE   192 AA;  21113 MW;  E8A900F442AD4522 CRC64;
```

```
  Query Match           90.4%;  Score 764.5;  DB 1;  Length 192;
  Best Local Similarity   91.5%;  Pred. No. 9.6e-64;
  Matches  151;  Conservative    7;  Mismatches    6;  Indels    1;  Gaps    1;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              |||||||||||||||||||||||:| ||:| ||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENVTMGCSESCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||:| |||||:||||||:|||:|||||:|||||||||| ||||
Db         88 VEVWQGLALLSEAVLRGQAVLANSSQPPEPLQLHMDKAISGLRSITTLLRALGAQ-EAIS 146

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              ||||||||||||||| |||||||||||||||||||||| ||
Db        147 LPDAASAAPLRTITADTFCKLFRVYSNFLRGKLKLYTGEACRRGD 191
```

```
RESULT 3
EPO_MACMU
ID   EPO_MACMU      STANDARD;      PRT;   192 AA.
AC   Q28513;
DT   01-NOV-1997 (Rel. 35, Created)
DT   01-NOV-1997 (Rel. 35, Last sequence update)
DT   25-OCT-2004 (Rel. 45, Last annotation update)
DE   Erythropoietin precursor.
GN   Name=EPO;
OS   Macaca mulatta (Rhesus macaque).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Catarrhini; Cercopithecidae;
OC   Cercopithecinae; Macaca.
OX   NCBI_TaxID=9544;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Kidney;
RX   MEDLINE=93372347; PubMed=8364201;
RA   Wen D., Boissel J.P.R., Tracy T.E., Gruninger R.H., Mulcahy L.S.,
RA   Czelusniak J., Goodman M., Bunn H.F.;
RT   "Erythropoietin structure-function relationships: high degree of
RT   sequence homology among mammals.";
RL   Blood 82:1507-1516(1993).
CC   -!- FUNCTION: Erythropoietin is the principal hormone involved in the
CC       regulation of erythrocyte differentiation and the maintenance of a
CC       physiological level of circulating erythrocyte mass.
CC   -!- SUBCELLULAR LOCATION: Secreted.
CC   -!- TISSUE SPECIFICITY: Produced by kidney or liver of adult mammals
CC       and by liver of fetal or neonatal mammals.
CC   -!- SIMILARITY: Belongs to the EPO / TPO family.
CC   ---------------------------------------------------------------------
CC   This SWISS-PROT entry is copyright. It is produced through a collaboration
CC   between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC   the European Bioinformatics Institute. There are no restrictions on its
CC   use by non-profit institutions as long as its content is in no way
CC   modified and this statement is not removed. Usage by and for commercial
CC   entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; L10609; AAA36842.1; -.
DR   PIR; I84613; I84613.
DR   HSSP; P01588; 1CN4.
DR   InterPro; IPR009079; 4_helix_cytokine.
DR   InterPro; IPR001323; EPO_TPO.
DR   InterPro; IPR003013; Erythroptn.
DR   Pfam; PF00758; EPO_TPO; 1.
DR   PIRSF; PIRSF001951; EPO; 1.
DR   PRINTS; PR00272; ERYTHROPTN.
DR   PROSITE; PS00817; EPO_TPO; 1.
KW   Erythrocyte maturation; Glycoprotein; Hormone; Signal.
FT   SIGNAL       1     27       By similarity.
FT   CHAIN       28    192       Erythropoietin.
FT   DISULFID    34    187       By similarity.
FT   DISULFID    56     60       By similarity.
FT   CARBOHYD    51     51       N-linked (GlcNAc. . .) (By similarity).
FT   CARBOHYD    65     65       N-linked (GlcNAc. . .) (By similarity).
```

```
FT   CARBOHYD    110    110       N-linked (GlcNAc. . .) (By similarity).
FT   CARBOHYD    152    152       O-linked (GalNAc. . .) (By similarity).
SQ   SEQUENCE   192 AA;  21081 MW;  275560A264628CD1 CRC64;

  Query Match             89.8%;  Score 759.5;  DB 1;  Length 192;
  Best Local Similarity   90.3%;  Pred. No. 2.8e-63;
  Matches  149;  Conservative    9;  Mismatches    6;  Indels    1;  Gaps    1;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||:|||||||||||||||||:| ||:| ||||||||||||||||||||:||||||
Db         28 APPRLVCDSRVLERYLLEAKEAENVTMGCSESCSLNENITVPDTKVNFYAWKRIEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||:| |||||:||||||:|||:|||||:|||||||||| ||||
Db         88 VEVWQGLALLSEAVLRGQAVLANSSQPFEPLQLHMDKAISGLRSITTLLRALGAQ-EAIS 146

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              ||||||||||||||| |||||||||||||||||||||| ||
Db        147 LPDAASAAPLRTITADTFCKLFRVYSNFLRGKLKLYTGEACRRGD 191


RESULT 4
Q867B1
ID   Q867B1      PRELIMINARY;      PRT;   192 AA.
AC   Q867B1;
DT   01-JUN-2003 (TrEMBLrel. 24, Created)
DT   01-JUN-2003 (TrEMBLrel. 24, Last sequence update)
DT   01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
DE   Erythropoietin.
GN   Name=EPO;
OS   Equus caballus (Horse).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Perissodactyla; Equidae; Equus.
OX   NCBI_TaxID=9796;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Kidney;
RX   PubMed=14719696;
RA   Sato F., Yamashita S., Kugo T., Hasegawa T., Mitsui I.,
RA   Kijima-Suda I.;
RT   "Nucleotide sequence of equine erythropoietin and characterization of
RT   region-specific antibodies.";
RL   Am. J. Vet. Res. 65:15-19(2004).
DR   EMBL; AB100030; BAC55239.1; -.
DR   HSSP; P01588; 1BUY.
DR   GO; GO:0005576; C:extracellular; IEA.
DR   GO; GO:0005128; F:erythropoietin receptor binding; IEA.
DR   GO; GO:0005179; F:hormone activity; IEA.
DR   InterPro; IPR009079; 4_helix_cytokine.
DR   InterPro; IPR001323; EPO_TPO.
DR   InterPro; IPR003013; Erythroptn.
DR   Pfam; PF00758; EPO_TPO; 1.
DR   PIRSF; PIRSF001951; EPO; 1.
DR   PRINTS; PR00272; ERYTHROPTN.
DR   PROSITE; PS00817; EPO_TPO; 1.
SQ   SEQUENCE   192 AA;  20984 MW;  E02D098490B09C4F CRC64;

  Query Match             85.5%;  Score 723;  DB 2;  Length 192;
  Best Local Similarity   84.8%;  Pred. No. 7.7e-60;
  Matches  140;  Conservative   10;  Mismatches   15;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||:|||:||||:| |||| ||  ||:||||||||||:|||||| |||
Db         27 APPRLICDSRVLERYILEAREAENVTMGCAEGCSFGENVTVPDTKVNFYSWKRMEVEQQA 86

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              |||||||||||||:|:||||| ||||| | |:||||||| |||||:|||||||||||||
Db         87 VEVWQGLALLSEAILQGQALLANSSQPSETLRLHVDKAVSSLRSLTSLLRALGAQKEAIS 146

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              ||||||||||||   ||  ||||:||||||||||||||||| ||
Db        147 PPDAASAAPLRTFAVDTLCKLFRIYSNFLRGKLKLYTGEACRRGD 191
```

```
RESULT 5
EPO_FELCA
ID   EPO_FELCA      STANDARD;      PRT;   192 AA.
AC   P33708;
DT   01-FEB-1994 (Rel. 28, Created)
DT   01-OCT-1996 (Rel. 34, Last sequence update)
DT   25-OCT-2004 (Rel. 45, Last annotation update)
DE   Erythropoietin precursor.
GN   Name=EPO;
OS   Felis silvestris catus (Cat).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Carnivora; Fissipedia; Felidae; Felis.
OX   NCBI_TaxID=9685;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Kidney;
RA   Goodman R.E., Bell R.G.;
RL   Submitted (NOV-1993) to the EMBL/GenBank/DDBJ databases.
RN   [2]
RP   SEQUENCE OF 5-192 FROM N.A.
RX   MEDLINE=93372347; PubMed=8364201;
RA   Wen D., Boissel J.P.R., Tracy T.E., Gruninger R.H., Mulcahy L.S.,
RA   Czelusniak J., Goodman M., Bunn H.F.;
RT   "Erythropoietin structure-function relationships: high degree of
RT   sequence homology among mammals.";
RL   Blood 82:1507-1516(1993).
CC   -!- FUNCTION: Erythropoietin is the principal hormone involved in the
CC       regulation of erythrocyte differentiation and the maintenance of a
CC       physiological level of circulating erythrocyte mass.
CC   -!- SUBCELLULAR LOCATION: Secreted.
CC   -!- TISSUE SPECIFICITY: Produced by kidney or liver of adult mammals
CC       and by liver of fetal or neonatal mammals.
CC   -!- SIMILARITY: Belongs to the EPO / TPO family.
CC   ----------------------------------------------------------------------
CC   This SWISS-PROT entry is copyright. It is produced through a collaboration
CC   between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC   the European Bioinformatics Institute. There are no restrictions on its
CC   use by non-profit institutions as long as its content is in no way
CC   modified and this statement is not removed. Usage by and for commercial
CC   entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC   or send an email to license@isb-sib.ch).
CC   ----------------------------------------------------------------------
DR   EMBL; U00685; AAA18282.1; -.
DR   EMBL; L10606; AAA30807.1; -.
DR   PIR; I46083; I46083.
DR   HSSP; P01588; 1BUY.
DR   InterPro; IPR009079; 4_helix_cytokine.
DR   InterPro; IPR001323; EPO_TPO.
DR   InterPro; IPR003013; Erythroptn.
DR   Pfam; PF00758; EPO_TPO; 1.
DR   PIRSF; PIRSF001951; EPO; 1.
DR   PRINTS; PR00272; ERYTHROPTN.
DR   PROSITE; PS00817; EPO_TPO; 1.
KW   Erythrocyte maturation; Glycoprotein; Hormone; Signal.
FT   SIGNAL       1     26       By similarity.
FT   CHAIN       27    192       Erythropoietin.
FT   DISULFID    33    187       By similarity.
FT   DISULFID    55     59       By similarity.
FT   CARBOHYD    50     50       N-linked (GlcNAc. . .) (Potential).
FT   CARBOHYD    64     64       N-linked (GlcNAc. . .) (Potential).
FT   CARBOHYD   109    109       N-linked (GlcNAc. . .) (Potential).
FT   CONFLICT    44     44       G -> E (in Ref. 2).
SQ   SEQUENCE   192 AA;  20914 MW;  61C5EA0F5E937293 CRC64;

  Query Match             83.5%;  Score 706;  DB 1;  Length 192;
  Best Local Similarity   83.6%;  Pred. No. 3e-58;
  Matches  138;  Conservative    9;  Mismatches   18;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||:| |:||||:| |||| || :|||||||||||| ||||:|||||
Db         27 APPRLICDSRVLERYILGAREAENVTMGCAEGCSFSENITVPDTKVNFYTWKRMDVGQQA 86
```

```
Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||:|||||| ||||| | |||||||||| |||||:|||||||||||| |
Db         87 VEVWQGLALLSEAILRGQALLANSSQPSETLQLHVDKAVSSLRSLTSLLRALGAQKEATS 146

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
                |:| ||||||| | ||  |||||:||||||||| |||||||| ||
Db        147 LPEATSAAPLRTFTVDTLCKLFRIYSNFLRGKLTLYTGEACRRGD 191


RESULT 6
EPO_RAT
ID   EPO_RAT        STANDARD;      PRT;   192 AA.
AC   P29676; P70504;
DT   01-APR-1993 (Rel. 25, Created)
DT   01-APR-1993 (Rel. 25, Last sequence update)
DT   25-OCT-2004 (Rel. 45, Last annotation update)
DE   Erythropoietin precursor.
GN   Name=Epo;
OS   Rattus norvegicus (Rat).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Rattus.
OX   NCBI_TaxID=10116;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   STRAIN=Wistar; TISSUE=Kidney;
RX   MEDLINE=93042015; PubMed=1420369; DOI=10.1016/0167-4781(92)90146-Q;
RA   Nagao M., Suga H., Okano M., Masuda S., Narita H., Ikura K.,
RA   Sasaki R.;
RT   "Nucleotide sequence of rat erythropoietin.";
RL   Biochim. Biophys. Acta 1171:99-102(1992).
RN   [2]
RP   SEQUENCE OF 4-192 FROM N.A.
RC   STRAIN=Sprague-Dawley; TISSUE=Kidney;
RX   MEDLINE=93372347; PubMed=8364201;
RA   Wen D., Boissel J.P.R., Tracy T.E., Mulcahy L.S., Czelusniak J.,
RA   Goodman M., Bunn H.F.;
RT   "Erythropoietin structure-function relationships: high degree of
RT   sequence homology among mammals.";
RL   Blood 82:1507-1516(1993).
CC   -!- FUNCTION: Erythropoietin is the principal hormone involved in the
CC       regulation of erythrocyte differentiation and the maintenance of a
CC       physiological level of circulating erythrocyte mass.
CC   -!- SUBCELLULAR LOCATION: Secreted.
CC   -!- TISSUE SPECIFICITY: Produced by kidney or liver of adult mammals
CC       and by liver of fetal or neonatal mammals.
CC   -!- SIMILARITY: Belongs to the EPO / TPO family.
CC   ----------------------------------------------------------------------
CC   This SWISS-PROT entry is copyright. It is produced through a collaboration
CC   between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC   the European Bioinformatics Institute. There are no restrictions on its
CC   use by non-profit institutions as long as its content is in no way
CC   modified and this statement is not removed. Usage by and for commercial
CC   entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC   or send an email to license@isb-sib.ch).
CC   ----------------------------------------------------------------------
DR   EMBL; D10763; BAA01593.1; -.
DR   EMBL; L10608; AAA41126.1; -.
DR   PIR; S28148; S28148.
DR   HSSP; P01588; 1CN4.
DR   RGD; 2559; Epo.
DR   InterPro; IPR009079; 4_helix_cytokine.
DR   InterPro; IPR001323; EPO_TPO.
DR   InterPro; IPR003013; Erythroptn.
DR   Pfam; PF00758; EPO_TPO; 1.
DR   PIRSF; PIRSF001951; EPO; 1.
DR   PRINTS; PR00272; ERYTHROPTN.
DR   PROSITE; PS00817; EPO_TPO; 1.
KW   Erythrocyte maturation; Glycoprotein; Hormone; Signal.
FT   SIGNAL       1     26       By similarity.
FT   CHAIN       27    192       Erythropoietin.
FT   DISULFID    33    187       By similarity.
FT   CARBOHYD    50     50       N-linked (GlcNAc. . .) (By similarity).
FT   CARBOHYD    64     64       N-linked (GlcNAc. . .) (By similarity).
FT   CARBOHYD   109    109       N-linked (GlcNAc. . .) (By similarity).
SQ   SEQUENCE   192 AA;  21286 MW;  3EA632737E7D2443 CRC64;

  Query Match             82.9%;  Score 701;  DB 1;  Length 192;
  Best Local Similarity   82.4%;  Pred. No. 9e-58;
  Matches  136;  Conservative   13;  Mismatches   16;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              |||||||||||||||:||||||||:| ||||   |:||||||||||||||||||:| :||
Db         27 APPRLICDSRVLERYILEAKEAENVTMGCAEGPRLSENITVPDTKVNFYAWKRMKVEEQA 86

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              |||||||:|||||:|: |||  ||||| | ||||:|||:|||||||:||| |||||| :|
Db         87 VEVWQGLSLLSEAILQAQALQANSSQPPESLQLHIDKAISGLRSLTSLLRVLGAQKELMS 146

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              ||||  ||||||:||||| ||||||||||||||||||||||| ||
Db        147 PPDATQAAPLRTLTADTFCKLFRVYSNFLRGKLKLYTGEACRRGD 191


RESULT 7
Q6PWU5
ID   Q6PWU5      PRELIMINARY;      PRT;   206 AA.
AC   Q6PWU5;
DT   05-JUL-2004 (TrEMBLrel. 27, Created)
DT   05-JUL-2004 (TrEMBLrel. 27, Last sequence update)
DT   05-JUL-2004 (TrEMBLrel. 27, Last annotation update)
DE   Erythropoietin.
OS   Canis familiaris (Dog).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Carnivora; Fissipedia; Canidae; Canis.
OX   NCBI_TaxID=9615;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Kidney;
RA   Souza D.S., Vicentim D.L., Costa F.F., Saad S.T.O.;
RL   Submitted (MAR-2004) to the EMBL/GenBank/DDBJ databases.
DR   EMBL; AY572971; AAS77874.1; -.
DR   GO; GO:0005576; C:extracellular; IEA.
DR   GO; GO:0005128; F:erythropoietin receptor binding; IEA.
DR   GO; GO:0005179; F:hormone activity; IEA.
DR   InterPro; IPR009079; 4_helix_cytokine.
DR   InterPro; IPR001323; EPO_TPO.
DR   InterPro; IPR003013; Erythroptn.
DR   Pfam; PF00758; EPO_TPO; 1.
DR   PRINTS; PR00272; ERYTHROPTN.
DR   PROSITE; PS00817; EPO_TPO; 1.
SQ   SEQUENCE   206 AA;  22666 MW;  1EEC64A02CE4F5B0 CRC64;

  Query Match             81.9%;  Score 693;  DB 2;  Length 206;
  Best Local Similarity   81.2%;  Pred. No. 5.5e-57;
  Matches  134;  Conservative   13;  Mismatches   18;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              |||||||||||||||:|||:||||:| |||: || :|||||||||||||| ||||:|||||
Db         41 APPRLICDSRVLERYILEAREAENVTMGCAQGCSFSENITVPDTKVNFYTWKRMDVGQQA 100

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              :|||||||||||:||||||| |:||| |  |||||||| |||||:||||||||||:|
Db        101 LEVWQGLALLSEAILRGQALLANASQPSETPQLHVDKAVSSLRSLTSLLRALGAQKEAMS 160

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
                |: || ||||| | ||  ||||:|||||||| |||||||| ||
Db        161 LPEEASPAPLRTFTVDTLCKLFRIYSNFLRGKLTLYTGEACRRGD 205


RESULT 8
EPO_BOVIN
ID   EPO_BOVIN      STANDARD;      PRT;   192 AA.
AC   P48617;
DT   01-FEB-1996 (Rel. 33, Created)
DT   01-FEB-1996 (Rel. 33, Last sequence update)
DT   25-OCT-2004 (Rel. 45, Last annotation update)
```

```
DE   Erythropoietin precursor.
GN   Name=EPO;
OS   Bos taurus (Bovine).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae;
OC   Bovinae; Bos.
OX   NCBI_TaxID=9913;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   STRAIN=Boran; TISSUE=Kidney;
RX   MEDLINE=96257233; PubMed=8666286; DOI=10.1016/0378-1119(95)00895-0;
RA   Suliman H.B., Majiwa P.A.O., Feldman B.F., Mertens B.,
RA   Logan-Henfrey L.L.;
RT   "Cloning of a cDNA encoding bovine erythropoietin and analysis of its
RT   transcription in selected tissues.";
RL   Gene 171:275-280(1996).
CC   -!- FUNCTION: Erythropoietin is the principal hormone involved in the
CC       regulation of erythrocyte differentiation and the maintenance of a
CC       physiological level of circulating erythrocyte mass.
CC   -!- SUBCELLULAR LOCATION: Secreted.
CC   -!- TISSUE SPECIFICITY: Produced by kidney or liver of adult mammals
CC       and by liver of fetal or neonatal mammals.
CC   -!- SIMILARITY: Belongs to the EPO / TPO family.
CC   ---------------------------------------------------------------------
CC   This SWISS-PROT entry is copyright. It is produced through a collaboration
CC   between  the Swiss Institute of Bioinformatics  and the  EMBL outstation -
CC   the European Bioinformatics Institute.  There are no  restrictions on  its
CC   use  by  non-profit  institutions as long  as its content  is  in  no  way
CC   modified and this statement is not removed.  Usage  by  and for commercial
CC   entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; L41354; AAB41268.1; -.
DR   EMBL; U44762; AAA86653.1; -.
DR   HSSP; P01588; 1CN4.
DR   InterPro; IPR009079; 4_helix_cytokine.
DR   InterPro; IPR001323; EPO_TPO.
DR   InterPro; IPR003013; Erythroptn.
DR   Pfam; PF00758; EPO_TPO; 1.
DR   PIRSF; PIRSF001951; EPO; 1.
DR   PRINTS; PR00272; ERYTHROPTN.
DR   PROSITE; PS00817; EPO_TPO; 1.
KW   Erythrocyte maturation; Glycoprotein; Hormone; Signal.
FT   SIGNAL        1     25       Potential.
FT   CHAIN        26    192       Erythropoietin.
FT   DISULFID     32    187       By similarity.
FT   DISULFID     54     58       By similarity.
FT   CARBOHYD     49     49       N-linked (GlcNAc. . .) (Potential).
FT   CARBOHYD     63     63       N-linked (GlcNAc. . .) (Potential).
FT   CARBOHYD    108    108       N-linked (GlcNAc. . .) (Potential).
SQ   SEQUENCE   192 AA;  21075 MW;  DBC419022F7B483A CRC64;

  Query Match             81.9%;  Score 692.5;  DB 1;  Length 192;
  Best Local Similarity   83.1%;  Pred. No. 5.7e-57;
  Matches  138;  Conservative    8;  Mismatches   19;  Indels    1;  Gaps    1;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              || |||||||||||:|||:|||| | |||| || ||||||||||||||||||||| |||
Db         26 APARLICDSRVLERYILEAREAENATMGCAEGCSFNENITVPDTKVNFYAWKRMEVQQQA 85

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              :|||||||||||:|||||| |:||| | |:||||||||||||:|||||||||||||
Db         86 LEVWQGLALLSEAILRGQALLANASQPCEALRLHVDKAVSGLRSLTSLLRALGAQKEAIS 145

Qy        121 PPDAA-SAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
                 |||  ||||||  | |   ||||:||||||||| ||||||||  ||
Db        146 LPDATPSAAPLRAFTVDALSKLFRIYSNFLRGKLTLYTGEACRRGD 191


RESULT 9
EPO_MOUSE
ID   EPO_MOUSE      STANDARD;      PRT;   192 AA.
AC   P07321;
DT   01-APR-1988 (Rel. 07, Created)
DT   01-APR-1988 (Rel. 07, Last sequence update)
DT   25-OCT-2004 (Rel. 45, Last annotation update)
DE   Erythropoietin precursor.
GN   Name=Epo;
OS   Mus musculus (Mouse).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX   NCBI_TaxID=10090;
RN   [1]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=87039105; PubMed=3773894;
RA   Shoemaker C.B., Mitsock L.D.;
RT   "Murine erythropoietin gene: cloning, expression, and human gene
RT   homology.";
RL   Mol. Cell. Biol. 6:849-858(1986).
RN   [2]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=87039104; PubMed=3022133;
RA   McDonald J.D., Lin F.-K., Goldwasser E.;
RT   "Cloning, sequencing, and evolutionary analysis of the mouse
RT   erythropoietin gene.";
RL   Mol. Cell. Biol. 6:842-848(1986).
RN   [3]
RP   SEQUENCE FROM N.A.
RC   STRAIN=129/Sv;
RX   MEDLINE=21138439; PubMed=11239002; DOI=10.1093/nar/29.6.1352;
RA   Wilson M.D., Riemer C., Martindale D.W., Schnupf P., Boright A.P.,
RA   Cheung T.L., Hardy D.M., Schwartz S., Scherer S.W., Tsui L.-C.,
RA   Miller W., Koop B.F.;
RT   "Comparative analysis of the gene-dense ACHE/TFR2 region on human
RT   chromosome 7q22 with the orthologous region on mouse chromosome 5.";
RL   Nucleic Acids Res. 29:1352-1365(2001).
RN   [4]
RP   SEQUENCE OF 1-52 FROM N.A.
RC   STRAIN=ICFW;
RX   MEDLINE=98030528; PubMed=9365246; DOI=10.1038/sj.onc.1201364;
RA   Chretien S., Duprez V., Maouche L., Gisselbrecht S., Mayeux P.,
RA   Lacombe C.;
RT   "Abnormal erythropoietin (Epo) gene expression in the murine
RT   erythroleukemia IW32 cells results from a rearrangement between the G-
RT   protein beta2 subunit gene and the Epo gene.";
RL   Oncogene 15:1995-1999(1997).
CC   -!- FUNCTION: Erythropoietin is the principal hormone involved in the
CC       regulation of erythrocyte differentiation and the maintenance of a
CC       physiological level of circulating erythrocyte mass.
CC   -!- SUBCELLULAR LOCATION: Secreted.
CC   -!- TISSUE SPECIFICITY: Produced by kidney or liver of adult mammals
CC       and by liver of fetal or neonatal mammals.
CC   -!- SIMILARITY: Belongs to the EPO / TPO family.
CC   ---------------------------------------------------------------------
CC   This SWISS-PROT entry is copyright. It is produced through a collaboration
CC   between  the Swiss Institute of Bioinformatics  and the  EMBL outstation -
CC   the European Bioinformatics Institute.  There are no  restrictions on  its
CC   use  by  non-profit  institutions as long  as its content  is  in  no  way
CC   modified and this statement is not removed.  Usage  by  and for commercial
CC   entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; M12482; AAA37568.1; -.
DR   EMBL; M12930; AAA37570.1; -.
DR   EMBL; AF312033; AAK28825.1; -.
DR   EMBL; Y11971; CAA72707.1; -.
DR   PIR; A24902; A24902.
DR   HSSP; P01588; 1CN4.
DR   MGD; MGI:95407; Epo.
DR   InterPro; IPR009079; 4_helix_cytokine.
DR   InterPro; IPR001323; EPO_TPO.
DR   InterPro; IPR003013; Erythroptn.
DR   Pfam; PF00758; EPO_TPO; 1.
DR   PIRSF; PIRSF001951; EPO; 1.
DR   PRINTS; PR00272; ERYTHROPTN.
DR   PROSITE; PS00817; EPO_TPO; 1.
```

```
KW   Erythrocyte maturation; Glycoprotein; Hormone; Signal.
FT   SIGNAL        1     26
FT   CHAIN        27    192       Erythropoietin.
FT   DISULFID     33    187       By similarity.
FT   CARBOHYD     50     50       N-linked (GlcNAc. . .) (By similarity).
FT   CARBOHYD     64     64       N-linked (GlcNAc. . .) (By similarity).
FT   CARBOHYD    109    109       N-linked (GlcNAc. . .) (By similarity).
SQ   SEQUENCE   192 AA;  21365 MW;  65F94E214E0DEF2E CRC64;

  Query Match             81.4%;  Score 689;  DB 1;  Length 192;
  Best Local Similarity   80.0%;  Pred. No. 1.2e-56;
  Matches  132;  Conservative   14;  Mismatches   19;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              |||||||||||||||:||||||||:| ||||   |:||||||||||||||||||| :||
Db         27 APPRLICDSRVLERYILEAKEAENVTMGCAEGPRLSENITVPDTKVNFYAWKRMEVEEQA 86

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              :||||||:|||||:|: |||| ||||| | ||||:|||:|||||||:||| |||||| :|
Db         87 IEVWQGLSLLSEAILQAQALLANSSQPPETLQLHIDKAISGLRSLTSLLRVLGAQKELMS 146

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||    |||||:| ||| |||||||:||||||||||||| || ||
Db        147 PPDTTPPAPLRTLTVDTFCKLFRVYANFLRGKLKLYTGEVCRRGD 191


RESULT 10
EPO_SHEEP
ID   EPO_SHEEP      STANDARD;      PRT;   194 AA.
AC   P33709; Q28572;
DT   01-FEB-1994 (Rel. 28, Created)
DT   01-FEB-1994 (Rel. 28, Last sequence update)
DT   25-OCT-2004 (Rel. 45, Last annotation update)
DE   Erythropoietin precursor.
GN   Name=EPO;
OS   Ovis aries (Sheep).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae;
OC   Caprinae; Ovis.
OX   NCBI_TaxID=9940;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Kidney;
RX   MEDLINE=93351736; PubMed=8349021; DOI=10.1016/0303-7207(93)90113-X;
RA   Fu P., Evans B., Lim G.B., Moritz K., Wintour M.E.;
RT   "The sheep erythropoietin gene: molecular cloning and effect of
RT   hemorrhage on plasma erythropoietin and renal/liver messenger RNA in
RT   adult sheep.";
RL   Mol. Cell. Endocrinol. 93:107-116(1993).
RN   [2]
RP   SEQUENCE OF 4-194 FROM N.A.
RC   TISSUE=Kidney;
RX   MEDLINE=93372347; PubMed=8364201;
RA   Wen D., Boissel J.P.R., Tracy T.E., Gruninger R.H., Mulcahy L.S.,
RA   Czelusniak J., Goodman M., Bunn H.F.;
RT   "Erythropoietin structure-function relationships: high degree of
RT   sequence homology among mammals.";
RL   Blood 82:1507-1516(1993).
CC   -!- FUNCTION: Erythropoietin is the principal hormone involved in the
CC       regulation of erythrocyte differentiation and the maintenance of a
CC       physiological level of circulating erythrocyte mass.
CC   -!- SUBCELLULAR LOCATION: Secreted.
CC   -!- TISSUE SPECIFICITY: Produced by kidney or liver of adult mammals
CC       and by liver of fetal or neonatal mammals.
CC   -!- SIMILARITY: Belongs to the EPO / TPO family.
CC   ---------------------------------------------------------------------
CC   This SWISS-PROT entry is copyright. It is produced through a collaboration
CC   between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC   the European Bioinformatics Institute. There are no restrictions on its
CC   use by non-profit institutions as long as its content is in no way
CC   modified and this statement is not removed. Usage by and for commercial
CC   entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; Z24681; CAA80848.1; -.
DR   EMBL; L10610; AAA31518.1; -.
DR   PIR; I46401; I46401.
DR   HSSP; P01588; 1CN4.
DR   InterPro; IPR009079; 4_helix_cytokine.
DR   InterPro; IPR001323; EPO_TPO.
DR   InterPro; IPR003013; Erythroptn.
DR   Pfam; PF00758; EPO_TPO; 1.
DR   PIRSF; PIRSF001951; EPO; 1.
DR   PRINTS; PR00272; ERYTHROPTN.
DR   PROSITE; PS00817; EPO_TPO; 1.
KW   Erythrocyte maturation; Glycoprotein; Hormone; Signal.
FT   SIGNAL        1     27       By similarity.
FT   CHAIN        28    194       Erythropoietin.
FT   DISULFID     34    189       By similarity.
FT   DISULFID     56     60       By similarity.
FT   CARBOHYD     51     51       N-linked (GlcNAc. . .) (Potential).
FT   CARBOHYD     65     65       N-linked (GlcNAc. . .) (Potential).
FT   CARBOHYD    110    110       N-linked (GlcNAc. . .) (Potential).
FT   CONFLICT     16     16       F -> L (in Ref. 2).
FT   CONFLICT    108    108       L -> P (in Ref. 2).
SQ   SEQUENCE   194 AA;  21335 MW;  C025AAB0528131A9 CRC64;

  Query Match             81.0%;  Score 685.5;  DB 1;  Length 194;
  Best Local Similarity   81.9%;  Pred. No. 2.6e-56;
  Matches  136;  Conservative    9;  Mismatches   20;  Indels    1;  Gaps    1;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              |||||||||||||||:|||:|||| | |||| || :|||||||||||||||||||| |||
Db         28 APPRLICDSRVLERYILEAREAENATMGCAEGCSFSENITVPDTKVNFYAWKRMEVQQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              :||||||||||||: |||||| |:||| | |:|||||||||||||:|||||||||||
Db         88 LEVWQGLALLSEAIFRGQALLANASQPCEALRLHVDKAVSGLRSLTSLLRALGAQKEAIP 147

Qy        121 PPDAA-SAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||  |||||| | |    ||||:||||||||| |||||||| ||
Db        148 LPDATPSAAPLRIFTVDALSKLFRIYSNFLRGKLTLYTGEACRRGD 193


RESULT 11
Q9GKA2
ID   Q9GKA2      PRELIMINARY;      PRT;   195 AA.
AC   Q9GKA2;
DT   01-MAR-2001 (TrEMBLrel. 16, Created)
DT   01-MAR-2001 (TrEMBLrel. 16, Last sequence update)
DT   01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
DE   Erythropoietin.
OS   Oryctolagus cuniculus (Rabbit).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Lagomorpha; Leporidae; Oryctolagus.
OX   NCBI_TaxID=9986;
RN   [1]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=21290682; PubMed=11396976; DOI=10.1006/bbrc.2001.5028;
RA   Vilalta A., Wu D., Margalith M., Hobart P.;
RT   "Rabbit EPO gene and cDNA: expression of rabbit EPO after
RT   intramuscular injection of pDNA.";
RL   Biochem. Biophys. Res. Commun. 284:823-827(2001).
DR   EMBL; AF290944; AAG36962.1; -.
DR   HSSP; P01588; 1CN4.
DR   GO; GO:0005576; C:extracellular; IEA.
DR   GO; GO:0005128; F:erythropoietin receptor binding; IEA.
DR   GO; GO:0005179; F:hormone activity; IEA.
DR   InterPro; IPR009079; 4_helix_cytokine.
DR   InterPro; IPR001323; EPO_TPO.
DR   InterPro; IPR003013; Erythroptn.
DR   Pfam; PF00758; EPO_TPO; 1.
DR   PIRSF; PIRSF001951; EPO; 1.
DR   PRINTS; PR00272; ERYTHROPTN.
DR   PROSITE; PS00817; EPO_TPO; 1.
SQ   SEQUENCE   195 AA;  21025 MW;  1F1DC7F403A303EC CRC64;
```

```
  Query Match             80.4%;  Score 680.5;  DB 2;  Length 195;
  Best Local Similarity   81.3%;  Pred. No. 7.7e-56;
  Matches  135;  Conservative   12;  Mismatches   18;  Indels    1;  Gaps    1;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              || |||||||||||:||||||||:| |||| ||| ||||||||||||: ||: | |: |
Db         29 APARLICDSRVLERYILEAKEAENVTMGCAEGCSLGENITVPDTKVNFHHWKKSEAGRHA 88

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              |||||||||||||:|| |||| |||| | ||:|||||||||||||:|||||| ||||:|
Db         89 VEVWQGLALLSEAMLRSQALLANSSQLPETLQVHVDKAVSGLRSLTSLLRALGVQKEAVS 148

Qy        121 PPDAA-SAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              ||:|| ||||||| ||| ||||:||||||||||||||||| ||
Db        149 PPEAASSAAPLRTVAADTLCKLFRIYSNFLRGKLKLYTGEACRRGD 194


RESULT 12
Q9GKA3
ID   Q9GKA3      PRELIMINARY;      PRT;   195 AA.
AC   Q9GKA3;
DT   01-MAR-2001 (TrEMBLrel. 16, Created)
DT   01-MAR-2001 (TrEMBLrel. 16, Last sequence update)
DT   01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
DE   Erythropoietin.
OS   Oryctolagus cuniculus (Rabbit).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Lagomorpha; Leporidae; Oryctolagus.
OX   NCBI_TaxID=9986;
RN   [1]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=21290682; PubMed=11396976; DOI=10.1006/bbrc.2001.5028;
RA   Vilalta A., Wu D., Margalith M., Hobart P.;
RT   "Rabbit EPO gene and cDNA: expression of rabbit EPO after
RT   intramuscular injection of pDNA.";
RL   Biochem. Biophys. Res. Commun. 284:823-827(2001).
DR   EMBL; AF290943; AAG36961.1; -.
DR   PIR; JC7699; JC7699.
DR   HSSP; P01588; 1CN4.
DR   GO; GO:0005576; C:extracellular; IEA.
DR   GO; GO:0005128; F:erythropoietin receptor binding; IEA.
DR   GO; GO:0005179; F:hormone activity; IEA.
DR   InterPro; IPR009079; 4_helix_cytokine.
DR   InterPro; IPR001323; EPO_TPO.
DR   InterPro; IPR003013; Erythroptn.
DR   Pfam; PF00758; EPO_TPO; 1.
DR   PIRSF; PIRSF001951; EPO; 1.
DR   PRINTS; PR00272; ERYTHROPTN.
DR   PROSITE; PS00817; EPO_TPO; 1.
SQ   SEQUENCE   195 AA;  21053 MW;  0999DA7D852713F3 CRC64;

  Query Match             80.4%;  Score 680.5;  DB 2;  Length 195;
  Best Local Similarity   81.3%;  Pred. No. 7.7e-56;
  Matches  135;  Conservative   12;  Mismatches   18;  Indels    1;  Gaps    1;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              || |||||||||||:||||||||:| |||| ||| ||||||||||||: ||: | |: |
Db         29 APARLICDSRVLERYILEAKEAENVTMGCAEGCSLGENITVPDTKVNFHHWKKSEAGRHA 88

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              |||||||||||.|:|| |||| |||| | ||:|||||||||||||:|||||| ||||:|
Db         89 VEVWQGLALLSEAMLRSQALLANSSQLPETLQVHVDKAVSGLRSLTSLLRALGVQKEAVS 148

Qy        121 PPDAA-SAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              ||:|| ||||||| ||| ||||:||||||||||||||||| ||
Db        149 PPEAASSAAPLRTVAADTLCKLFRIYSNFLRGKLKLYTGEACRRGD 194


RESULT 13
EPO_PIG
ID   EPO_PIG        STANDARD;      PRT;   190 AA.
AC   P49157;
DT   01-FEB-1996 (Rel. 33, Created)
DT   01-FEB-1996 (Rel. 33, Last sequence update)
DT   05-JUL-2004 (Rel. 44, Last annotation update)
DE   Erythropoietin precursor (Fragment).
GN   Name=EPO;
OS   Sus scrofa (Pig).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Cetartiodactyla; Suina; Suidae; Sus.
OX   NCBI_TaxID=9823;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Kidney;
RX   MEDLINE=93372347; PubMed=8364201;
RA   Wen D., Boissel J.P.R., Tracy T.E., Gruninger R.H., Mulcahy L.S.,
RA   Czelusniak J., Goodman M., Bunn H.F.;
RT   "Erythropoietin structure-function relationships: high degree of
RT   sequence homology among mammals.";
RL   Blood 82:1507-1516(1993).
CC   -!- FUNCTION: Erythropoietin is the principal hormone involved in the
CC       regulation of erythrocyte differentiation and the maintenance of a
CC       physiological level of circulating erythrocyte mass.
CC   -!- SUBCELLULAR LOCATION: Secreted.
CC   -!- TISSUE SPECIFICITY: Produced by kidney or liver of adult mammals
CC       and by liver of fetal or neonatal mammals.
CC   -!- SIMILARITY: Belongs to the EPO / TPO family.
CC   ---------------------------------------------------------------------
CC   This SWISS-PROT entry is copyright. It is produced through a collaboration
CC   between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC   the European Bioinformatics Institute. There are no restrictions on its
CC   use by non-profit institutions as long as its content is in no way
CC   modified and this statement is not removed. Usage by and for commercial
CC   entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; L10607; AAA31029.1; -.
DR   PIR; I46578; I46578.
DR   HSSP; P01588; 1CN4.
DR   InterPro; IPR009079; 4_helix_cytokine.
DR   InterPro; IPR001323; EPO_TPO.
DR   InterPro; IPR003013; Erythroptn.
DR   Pfam; PF00758; EPO_TPO; 1.
DR   PRINTS; PR00272; ERYTHROPTN.
DR   PROSITE; PS00817; EPO_TPO; 1.
KW   Erythrocyte maturation; Glycoprotein; Hormone; Signal.
FT   NON_TER       1      1
FT   SIGNAL       <1     22       Potential.
FT   CHAIN        23    190       Erythropoietin.
FT   DISULFID     29    185       By similarity.
FT   DISULFID     51     55       By similarity.
FT   CARBOHYD     46     46       N-linked (GlcNAc. . .) (Potential).
FT   CARBOHYD     60     60       N-linked (GlcNAc. . .) (Potential).
FT   CARBOHYD    105    105       N-linked (GlcNAc. . .) (Potential).
FT   CARBOHYD    168    168       N-linked (GlcNAc. . .) (Potential).
SQ   SEQUENCE   190 AA;  20888 MW;  A75BD6CCE5077E2A CRC64;

  Query Match             80.1%;  Score 678;  DB 1;  Length 190;
  Best Local Similarity   82.0%;  Pred. No. 1.3e-55;
  Matches  137;  Conservative    7;  Mismatches   21;  Indels    2;  Gaps    1;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              |||||||||||||||:|||||  || | |||| || :|||||||||||||||||||| |||
Db         23 APPRLICDSRVLERYILEAKEGENATMGCAESCSFSENITVPDTKVNFYAWKRMEVQQQA 82

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              :||||||||||||:|:||||| ||||| | |||||||||||||||:||||||||||||
Db         83 MEVWQGLALLSEAILQGQALLANSSQPSEALQLHVDKAVSGLRSLTSLLRALGAQKEAIP 142

Qy        121 PPDA--ASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
                 |||  :|| ||||   ||  |||| ||||||||| ||||||||  |
Db        143 LPDASPSSATPLRTFAVDTLCKLFRNYSNFLRGKLTLYTGEACRRRD 189


RESULT 14
```

```
Q6H8S9
ID   Q6H8S9      PRELIMINARY;      PRT;   192 AA.
AC   Q6H8S9;
DT   05-JUL-2004 (TrEMBLrel. 27, Created)
DT   05-JUL-2004 (TrEMBLrel. 27, Last sequence update)
DT   05-JUL-2004 (TrEMBLrel. 27, Last annotation update)
DE   Erythropoietin precursor.
GN   Name=epo;
OS   Spalax galili.
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Spalacinae;
OC   Spalax.
OX   NCBI_TaxID=164323;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Liver;
RA   Shams I., Avivi A., Nevo E.;
RT   "Hypoxic stress tolerance of the subterranean mole rat: Expression of
RT   erythropoietin and hypoxia-inducible factor-1a.";
RL   Nucleic Acids Res. 0:0-0(2004).
RN   [2]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Liver;
RX   PubMed=15210955; DOI=10.1073/pnas.0403540101;
RA   Shams I., Avivi A., Eviatar N.;
RT   "Hypoxic stress tolerance of the blind subterranean mole rat:
RT   expression of erythropoietin and hypoxia-inducible factor 1 alpha.";
RL   Proc. Natl. Acad. Sci. U.S.A. 101:9698-9703(2004).
DR   EMBL; AJ715795; CAG29400.1; -.
DR   GO; GO:0005576; C:extracellular; IEA.
DR   GO; GO:0005128; F:erythropoietin receptor binding; IEA.
DR   GO; GO:0005179; F:hormone activity; IEA.
DR   InterPro; IPR009079; 4_helix_cytokine.
DR   InterPro; IPR001323; EPO_TPO.
DR   InterPro; IPR003013; Erythroptn.
DR   Pfam; PF00758; EPO_TPO; 1.
DR   PRINTS; PR00272; ERYTHROPTN.
DR   PROSITE; PS00817; EPO_TPO; 1.
KW   Signal.
FT   SIGNAL        1      7       Potential.
FT   CHAIN         8    192       erythropoietin.
SQ   SEQUENCE   192 AA;  21372 MW;  72FCA94DE8C5AAB5 CRC64;

  Query Match             80.1%;  Score 678;  DB 2;  Length 192;
  Best Local Similarity   80.6%;  Pred. No. 1.3e-55;
  Matches  133;  Conservative    8;  Mismatches   24;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||:||||||||||| ||||    ||| |||||||||||||| | | :||
Db         27 APPRLICDSRVLERYILEAKEAENITMGCAEGPRFNENFTVPDTKVNFYAWKTMGVEEQA 86

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              |||||||:|| ||:|| ||:| ||||| | ||||||||:||||||||:|||||||||||||
Db         87 VEVWQGLSLLFEAILRAQAVLANSSQPSEMLQLHVDKAISGLRSLTSLLRALGAQKEAIS 146

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||     |||  | ||| ||||:||||||||||||||||| ||
Db        147 PPDTTQVIPLRRFTVDTFCKLFRIYSNFLRGKLKLYTGEACRRGD 191


RESULT 15
Q6H8T0
ID   Q6H8T0      PRELIMINARY;      PRT;   192 AA.
AC   Q6H8T0;
DT   05-JUL-2004 (TrEMBLrel. 27, Created)
DT   05-JUL-2004 (TrEMBLrel. 27, Last sequence update)
DT   05-JUL-2004 (TrEMBLrel. 27, Last annotation update)
DE   Erythropoietin precursor.
GN   Name=epo;
OS   Spalax judaei (Blind subterranean mole rat).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Spalacinae;
OC   Spalax.
OX   NCBI_TaxID=134510;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Liver;
RA   Shams I., Avivi A., Nevo E.;
RT   "Hypoxic stress tolerance of the subterranean mole rat: Expression of
RT   erythropoietin and hypoxia-inducible factor-1a.";
RL   Nucleic Acids Res. 0:0-0(2004).
RN   [2]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Liver;
RX   PubMed=15210955; DOI=10.1073/pnas.0403540101;
RA   Shams I., Avivi A., Eviatar N.;
RT   "Hypoxic stress tolerance of the blind subterranean mole rat:
RT   expression of erythropoietin and hypoxia-inducible factor 1 alpha.";
RL   Proc. Natl. Acad. Sci. U.S.A. 101:9698-9703(2004).
DR   EMBL; AJ715794; CAG29399.1; -.
DR   GO; GO:0005576; C:extracellular; IEA.
DR   GO; GO:0005128; F:erythropoietin receptor binding; IEA.
DR   GO; GO:0005179; F:hormone activity; IEA.
DR   InterPro; IPR009079; 4_helix_cytokine.
DR   InterPro; IPR001323; EPO_TPO.
DR   InterPro; IPR003013; Erythroptn.
DR   Pfam; PF00758; EPO_TPO; 1.
DR   PRINTS; PR00272; ERYTHROPTN.
DR   PROSITE; PS00817; EPO_TPO; 1.
KW   Signal.
FT   SIGNAL        1      7       Potential.
FT   CHAIN         8    192       erythropoietin.
SQ   SEQUENCE   192 AA;  21372 MW;  72FCA94DE8C5AAB5 CRC64;

  Query Match             80.1%;  Score 678;  DB 2;  Length 192;
  Best Local Similarity   80.6%;  Pred. No. 1.3e-55;
  Matches  133;  Conservative    8;  Mismatches   24;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||:||||||||||| ||||    ||| |||||||||||||| | | :||
Db         27 APPRLICDSRVLERYILEAKEAENITMGCAEGPRFNENFTVPDTKVNFYAWKTMGVEEQA 86

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              |||||||:|| ||:|| ||:| ||||| | ||||||||:||||||||:|||||||||||||
Db         87 VEVWQGLSLLFEAILRAQAVLANSSQPSEMLQLHVDKAISGLRSLTSLLRALGAQKEAIS 146

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||     |||  | ||| ||||:||||||||||||||||| ||
Db        147 PPDTTQVIPLRRFTVDTFCKLFRIYSNFLRGKLKLYTGEACRRGD 191


Search completed: August 23, 2005, 13:55:39
Job time : 181 secs
```

THIS PAGE BLANK (USPTO)

GenCore version 5.1.6
Copyright (c) 1993 - 2005 Compugen Ltd.

OM protein - protein search, using sw model

Run on: August 23, 2005, 13:52:33 ; Search time 39 Seconds
(without alignments)
407.071 Million cell updates/sec

Title: US-10-706-701-1
Perfect score: 846
Sequence: 1 APPRLICDSRVLERYLLEAK.....SNFLRGKLKLYTGEACRTGD 165

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 283416 seqs, 96216763 residues

Total number of hits satisfying chosen parameters: 283416

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : PIR_79:*
1: pir1:*
2: pir2:*
3: pir3:*
4: pir4:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Query Match	Length	DB	ID	Description
1	846	100.0	193	1	ZUHU	erythropoietin pre
2	764.5	90.4	192	1	JQ0173	erythropoietin pre
3	759.5	89.8	192	1	I84613	erythropoietin pre
4	713	84.3	188	1	I46083	erythropoietin pre
5	701	82.9	192	1	S28148	erythropoietin pre
6	685.5	81.0	194	1	I46401	erythropoietin pre
7	681	80.5	192	1	A24902	erythropoietin pre
8	680.5	80.4	195	2	JC7699	erythropoietin - r
9	678	80.1	190	2	I46578	erythropoietin - p
10	638	75.4	175	2	I46199	erythropoietin - d
11	90	10.6	353	2	G02729	thrombopoietin - h
12	89	10.5	353	2	I80105	thrombopoietin pre
13	88	10.4	323	2	AB0323	ribonucleoside-dip
14	87.5	10.3	346	2	AE0959	Solute binding rec
15	86	10.2	286	2	A55530	megakaryocyte grow
16	83	9.8	296	2	AI0443	probable 2-hydroxy
17	83	9.8	339	2	A83274	UDP-N-acetylpyruvo
18	80.5	9.5	3033	1	GNWVJ8	genome polyprotein
19	79.5	9.4	1829	2	T35681	probable sensory h
20	79	9.3	480	2	S56639	ribosomal protein
21	78.5	9.3	813	2	AF0526	ATP-dependent heli
22	78.5	9.3	897	2	A54696	EGF receptor subst
23	78	9.2	348	2	T35450	ABC transporter AT
24	78	9.2	455	2	AG2919	conserved hypothet
25	78	9.2	455	2	H97693	methylamine utiliz
26	78	9.2	747	1	S36741	probable copper-tr
27	77.5	9.2	242	2	AD1928	hypothetical prote
28	77	9.1	451	2	S75569	hypothetical prote
29	76.5	9.0	154	2	H82810	bacterioferritin X
30	76.5	9.0	425	2	AE3465	mandelate racemase
31	75.5	8.9	637	2	S75772	hypothetical prote
32	74.5	8.8	400	2	AB2922	conserved hypothet
33	74.5	8.8	425	2	C97696	rtS beta (AF305057
34	74.5	8.8	824	2	D64738	ATP-dependent heli
35	74	8.7	282	2	B37994	RF2 protein - saim
36	74	8.7	326	2	JC4125	thrombopoietin pre
37	74	8.7	335	2	AH3625	ribonucleoside-dip
38	74	8.7	1564	2	S55517	probable transport
39	73.5	8.7	401	2	H83911	hypothetical prote
40	73.5	8.7	476	1	S71789	GCN5 protein - hum
41	73.5	8.7	717	2	F82613	VacB protein XF198
42	73	8.6	263	2	B75361	WD-repeat family p
43	73	8.6	1089	2	S53978	PSE1 protein - yea
44	72.5	8.6	379	2	H69478	NADH2 dehydrogenas
45	72.5	8.6	401	2	AF3341	precorrin-6y c5,15

ALIGNMENTS

RESULT 1
ZUHU
erythropoietin precursor [validated] - human
C;Species: Homo sapiens (man)
C;Date: 27-Nov-1985 #sequence_revision 27-Nov-1985 #text_change 09-Jul-2004
C;Accession: A01855; A24744; A25384; A22210; S56178
R;Jacobs, K.; Shoemaker, C.; Rudersdorf, R.; Neill, S.D.; Kaufman, R.J.; Mufson, A.; Seeb
Nature 313, 806-810, 1985
A;Title: Isolation and characterization of genomic and cDNA clones of human erythropoiet
A;Reference number: A01855; MUID:85137899; PMID:3838366
A;Accession: A01855
A;Molecule type: mRNA; DNA
A;Residues: 1-193 <JAC>
A;Cross-references: UNIPROT:P01588; GB:X02157; GB:X02158
R;Lin, F.K.; Suggs, S.; Lin, C.H.; Browne, J.K.; Smalling, R.; Egrie, J.C.; Chen, K.K.; E
Proc. Natl. Acad. Sci. U.S.A. 82, 7580-7584, 1985
A;Title: Cloning and expression of the human erythropoietin gene.
A;Reference number: A24744; MUID:86067948; PMID:3865178
A;Accession: A24744
A;Molecule type: DNA
A;Residues: 1-193 <LIN>
A;Cross-references: GB:M11319; NID:g182197; PIDN:AAA52400.1; PID:g182198
R;Lai, P.H.; Everett, R.; Wang, F.F.; Arakawa, T.; Goldwasser, E.
J. Biol. Chem. 261, 3116-3121, 1986
A;Title: Structural characterization of human erythropoietin.
A;Reference number: A25384; MUID:86140080; PMID:3949763
A;Accession: A25384
A;Molecule type: protein
A;Residues: 28-86,'Q',87-193 <LAI>
A;Experimental source: urine
A;Note: forms without the carboxyl-terminal residue and the four carboxyl-terminal residu
R;Yanagawa, S.; Hirade, K.; Ohnota, H.; Sasaki, R.; Chiba, H.; Ueda, M.; Goto, M.
J. Biol. Chem. 259, 2707-2710, 1984
A;Title: Isolation of human erythropoietin with monoclonal antibodies.
A;Reference number: A22210; MUID:84135751; PMID:6698989
A;Accession: A22210
A;Molecule type: protein
A;Residues: 28-29,'X',31-33,'L',35-50,'X',52-53,'D',55,'G',57 <YAN>
R;Matsumoto, S.; Ikura, K.; Ueda, M.; Sasaki, R.
Plant Mol. Biol. 27, 1163-1172, 1995
A;Title: Characterization of a human glycoprotein (erythropoietin) produced in cultured t
A;Reference number: S56178; MUID:95284365; PMID:7766897
A;Accession: S56178
A;Molecule type: protein
A;Residues: 28-33,'X',35-37 <MTS>
C;Comment: Erythropoietin is produced by kidney or liver of adult mammals and by liver of
C;Genetics:
A;Gene: GDB:EPO
A;Cross-references: GDB:119110; OMIM:133170
A;Map position: 7q21.3-7q22.1
A;Introns: 5/1; 53/3; 82/3; 142/3
C;Function:

```
A;Description: the primary inducer of erythrocyte formation
C;Superfamily: erythropoietin
C;Keywords: erythropoiesis; glycoprotein; hormone; kidney; liver
F;1-27/Domain: signal sequence #status predicted <SIG>
F;28-193/Product: erythropoietin #status experimental <MAT>
F;34-188,56-60/Disulfide bonds: #status experimental
F;51,65,110/Binding site: carbohydrate (Asn) (covalent) #status experimental
F;153/Binding site: carbohydrate (Ser) (covalent) #status experimental

  Query Match             100.0%;  Score 846;  DB 1;  Length 193;
  Best Local Similarity   100.0%;  Pred. No. 1.7e-73;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 2
JQ0173
erythropoietin precursor - crab-eating macaque
C;Species: Macaca fascicularis (crab-eating macaque)
C;Date: 07-Sep-1990 #sequence_revision 15-Nov-1996 #text_change 09-Jul-2004
C;Accession: JQ0173
R;Lin, F.K.; Lin, C.H.; Lai, P.H.; Browne, J.K.; Egrie, J.C.; Smalling, R.; Fox, G.M.; C
Gene 44, 201-209, 1986
A;Title: Monkey erythropoietin gene: cloning, expression and comparison with the human e
A;Reference number: JQ0173; MUID:87055236; PMID:2877922
A;Accession: JQ0173
A;Molecule type: mRNA
A;Residues: 1-192 <LIN>
A;Cross-references: UNIPROT:P07865; GB:M18189; GB:M15818; GB:M15819; GB:M18188; NID:g342
A;Experimental source: kidney
C;Comment: This protein is the principal hormone involved in the regulation of erythrocy
C;Comment: Erythropoietin is produced by kidney or liver of adult mammals and by liver c
C;Function:
A;Description: the primary inducer of erythrocyte formation
C;Superfamily: erythropoietin
C;Keywords: erythropoiesis; glycoprotein; hormone; kidney; liver
F;1-27/Domain: signal sequence #status predicted <SIG>
F;28-192/Product: erythropoietin #status predicted <MAT>
F;34-187,56-60/Disulfide bonds: #status predicted
F;51,65,110/Binding site: carbohydrate (Asn) (covalent) #status predicted
F;152/Binding site: carbohydrate (Ser) (covalent) #status predicted

  Query Match             90.4%;  Score 764.5;  DB 1;  Length 192;
  Best Local Similarity   91.5%;  Pred. No. 1.1e-65;
  Matches  151;  Conservative    7;  Mismatches    6;  Indels    1;  Gaps    1;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              |||||||||||||||||||||||:| ||:| ||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENVTMGCSESCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||:| |||||:||||||:|||:||||||:|||||||||| ||||
Db         88 VEVWQGLALLSEAVLRGQAVLANSSQPFEPLQLHMDKAISGLRSITTLLRALGAQ-EAIS 146

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||| |||||||||||||||||||||||| ||
Db        147 LPDAASAAPLRTITADTFCKLFRVYSNFLRGKLKLYTGEACRRGD 191


RESULT 3
I84613
erythropoietin precursor - rhesus macaque
C;Species: Macaca mulatta (rhesus macaque)
C;Date: 02-Aug-1996 #sequence_revision 15-Nov-1996 #text_change 09-Jul-2004
C;Accession: I84613
R;Wen, D.; Boissel, J.
Blood 82, 1507-1516, 1993
A;Title: Erythropoietin structure-function relationships: High degree of sequence homolog
A;Reference number: I46083; MUID:93372347; PMID:8364201
A;Accession: I84613
A;Status: preliminary; translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
A;Residues: 1-192 <RES>
A;Cross-references: UNIPROT:Q28513; GB:L10609; NID:g342095; PIDN:AAA36842.1; PID:g342096
C;Comment: Erythropoietin is produced by kidney or liver of adult mammals and by liver of
C;Function:
A;Description: the primary inducer of erythrocyte formation
C;Superfamily: erythropoietin
C;Keywords: erythropoiesis; glycoprotein; hormone; kidney; liver
F;1-27/Domain: signal sequence #status predicted <SIG>
F;28-192/Product: erythropoietin #status predicted <MAT>
F;34-187,56-60/Disulfide bonds: #status predicted
F;51,65,110/Binding site: carbohydrate (Asn) (covalent) #status predicted
F;152/Binding site: carbohydrate (Ser) (covalent) #status predicted

  Query Match             89.8%;  Score 759.5;  DB 1;  Length 192;
  Best Local Similarity   90.3%;  Pred. No. 3.2e-65;
  Matches  149;  Conservative    9;  Mismatches    6;  Indels    1;  Gaps    1;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              |||||:|||||||||||||||:| ||:| ||||||||||||||||||||:||||||
Db         28 APPRLVCDSRVLERYLLEAKEAENVTMGCSESCSLNENITVPDTKVNFYAWKRIEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||:| |||||:||||||:|||:||||||:|||||||||| ||||
Db         88 VEVWQGLALLSEAVLRGQAVLANSSQPFEPLQLHMDKAISGLRSITTLLRALGAQ-EAIS 146

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||| |||||||||||||||||||||||| ||
Db        147 LPDAASAAPLRTITADTFCKLFRVYSNFLRGKLKLYTGEACRRGD 191


RESULT 4
I46083
erythropoietin precursor - cat (fragment)
C;Species: Felis silvestris catus (domestic cat)
C;Date: 16-Aug-1996 #sequence_revision 15-Nov-1996 #text_change 09-Jul-2004
C;Accession: I46083
R;Wen, D.; Boissel, J.
Blood 82, 1507-1516, 1993
A;Title: Erythropoietin structure-function relationships: High degree of sequence homolog
A;Reference number: I46083; MUID:93372347; PMID:8364201
A;Accession: I46083
A;Status: translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
A;Residues: 1-188 <WEN>
A;Cross-references: UNIPROT:P33708; GB:L10606; NID:g163820; PIDN:AAA30807.1; PID:g163821
C;Comment: Erythropoietin is produced by kidney or liver of adult mammals and by liver of
C;Function:
A;Description: the primary inducer of erythrocyte formation
C;Superfamily: erythropoietin
C;Keywords: erythropoiesis; glycoprotein; hormone; kidney; liver
F;1-22/Domain: signal sequence (fragment) #status predicted <SIG>
F;23-188/Product: erythropoietin #status predicted <MAT>
F;29-183,51-55/Disulfide bonds: #status predicted
F;46,60,105/Binding site: carbohydrate (Asn) (covalent) #status predicted
F;148/Binding site: carbohydrate (Ser) (covalent) #status predicted

  Query Match             84.3%;  Score 713;  DB 1;  Length 188;
  Best Local Similarity   84.2%;  Pred. No. 8.8e-61;
  Matches  139;  Conservative    9;  Mismatches   17;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              |||||||||||||||:|||:||||:| |||| || :|||||||||||||| ||||:|||||
Db         23 APPRLICDSRVLERYILEAREAENVTMGCAEGCSFSENITVPDTKVNFYTWKRMDVGQQA 82
```

```
Qy          61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
               ||||||||||||||:||||||| ||||| | |||||||||| |||||:|||||||||||| |
Db          83 VEVWQGLALLSEAILRGQALLANSSQPSETLQLHVDKAVSSLRSLTSLLRALGAQKEATS 142

Qy         121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
                 |:| ||||||| | ||  ||||:||||||||| |||||||| ||
Db         143 LPEATSAAPLRTFTVDTLCKLFRIYSNFLRGKLTLYTGEACRRGD 187


RESULT 5
S28148
erythropoietin precursor - rat
C;Species: Rattus norvegicus (Norway rat)
C;Date: 22-Nov-1993 #sequence_revision 15-Nov-1996 #text_change 09-Jul-2004
C;Accession: S28148; I62743
R;Nagao, M.; Suga, H.; Okano, M.; Masuda, S.; Narita, H.; Ikura, K.; Sasaki, R.
Biochim. Biophys. Acta 1171, 99-102, 1992
A;Title: Nucleotide sequence of rat erythropoietin.
A;Reference number: S28148; MUID:93042015; PMID:1420369
A;Accession: S28148
A;Molecule type: mRNA
A;Residues: 1-192 <NAG>
A;Cross-references: UNIPROT:P29676; GB:D10763; NID:g220735; PIDN:BAA01593.1; PID:g220736
R;Wen, D.; Boissel, J.
Blood 82, 1507-1516, 1993
A;Title: Erythropoietin structure-function relationships: High degree of sequence homolo
A;Reference number: I46083; MUID:93372347; PMID:8364201
A;Accession: I62743
A;Status: translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
A;Residues: 4-192 <RES>
A;Cross-references: GB:L10608; NID:g204060; PIDN:AAA41126.1; PID:g204061
C;Comment: Erythropoietin is produced by kidney or liver of adult mammals and by liver o
C;Function:
A;Description: the primary inducer of erythrocyte formation
C;Superfamily: erythropoietin
C;Keywords: erythropoiesis; glycoprotein; hormone; kidney; liver
F;1-26/Domain: signal sequence #status predicted <SIG>
F;27-192/Product: erythropoietin #status predicted <MAT>
F;33-187,55-165/Disulfide bonds: #status predicted
F;50,64,109/Binding site: carbohydrate (Asn) (covalent) #status predicted

  Query Match             82.9%;  Score 701;  DB 1;  Length 192;
  Best Local Similarity   82.4%;  Pred. No. 1.3e-59;
  Matches  136;  Conservative   13;  Mismatches   16;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              |||||||||||||||:||||||||:| ||||   |:||||||||||||||||||:| :||
Db         27 APPRLICDSRVLERYILEAKEAENVTMGCAEGPRLSENITVPDTKVNFYAWKRMKVEEQA 86

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              |||||||:|||||:|: |||  ||||| | ||||:|||:||||||||:||| |||||| :|
Db         87 VEVWQGLSLLSEAILQAQALQANSSQPPESLQLHIDKAISGLRSLTSLLRVLGAQKELMS 146

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
                ||||  |||||||:||||| ||||||||||||||||||||| ||
Db        147 PPDATQAAPLRTLTADTFCKLFRVYSNFLRGKLKLYTGEACRRGD 191


RESULT 6
I46401
erythropoietin precursor - sheep
C;Species: Ovis orientalis aries, Ovis ammon aries (domestic sheep)
C;Date: 16-Aug-1996 #sequence_revision 15-Nov-1996 #text_change 09-Jul-2004
C;Accession: I46401; I47077
R;Fu, P.; Evans, B.; Lim, G.B.; Moritz, K.; Wintour, E.M.
Mol. Cell. Endocrinol. 93, 107-116, 1993
A;Title: The sheep erythropoietin gene: molecular cloning and effect of hemorrhage on pl
A;Reference number: I46401; MUID:93351736; PMID:8349021
A;Accession: I46401
A;Status: translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
A;Residues: 1-194 <FUX>
A;Cross-references: UNIPROT:P33709; EMBL:Z24681; NID:g395049; PIDN:CAA80848.1; PID:g3950
R;Wen, D.; Boissel, J.
Blood 82, 1507-1516, 1993
A;Title: Erythropoietin structure-function relationships: High degree of sequence homolo
A;Reference number: I46083; MUID:93372347; PMID:8364201
A;Accession: I47077
A;Status: translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
A;Residues: 4-15,'L',17-107,'P',109-194 <WEN>
A;Cross-references: GB:L10610; NID:g165876; PIDN:AAA31518.1; PID:g165877
C;Comment: Erythropoietin is produced by kidney or liver of adult mammals and by liver of
C;Function:
A;Description: the primary inducer of erythrocyte formation
C;Superfamily: erythropoietin
C;Keywords: erythropoiesis; glycoprotein; hormone; kidney; liver
F;1-27/Domain: signal sequence #status predicted <SIG>
F;28-194/Product: erythropoietin #status predicted <MAT>
F;34-189,56-60/Disulfide bonds: #status predicted
F;51,65,110/Binding site: carbohydrate (Asn) (covalent) #status predicted
F;154/Binding site: carbohydrate (Ser) (covalent) #status predicted

  Query Match             81.0%;  Score 685.5;  DB 1;  Length 194;
  Best Local Similarity   81.9%;  Pred. No. 3.9e-58;
  Matches  136;  Conservative    9;  Mismatches   20;  Indels    1;  Gaps    1;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              |||||||||||||||:|||:|||| | |||| || :|||||||||||||||||||| |||
Db         28 APPRLICDSRVLERYILEAREAENATMGCAEGCSFSENITVPDTKVNFYAWKRMEVQQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              :|||||||||||: |||||| |:||| | |:|||||||||||||:||||||||||||
Db         88 LEVWQGLALLSEAIFRGQALLANASQPCEALRLHVDKAVSGLRSLTSLLRALGAQKEAIP 147

Qy        121 PPDAA-SAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
                |||  ||||||  | |   ||||:||||||||| |||||||| ||
Db        148 LPDATPSAAPLRIFTVDALSKLFRIYSNFLRGKLTLYTGEACRRGD 193


RESULT 7
A24902
erythropoietin precursor - mouse
C;Species: Mus musculus (house mouse)
C;Date: 25-Oct-1987 #sequence_revision 15-Nov-1996 #text_change 09-Jul-2004
C;Accession: A24902; A24901
R;Shoemaker, C.B.; Mitsock, L.D.
Mol. Cell. Biol. 6, 849-858, 1986
A;Title: Murine erythropoietin gene: cloning, expression, and human gene homology.
A;Reference number: A24902; MUID:87039105; PMID:3773894
A;Accession: A24902
A;Molecule type: DNA
A;Residues: 1-192 <SHO>
A;Cross-references: UNIPROT:P07321
A;Note: the authors translated the codon TTA for residue 12 as Phe, TTA for residue 43 a
R;McDonald, J.D.; Lin, F.K.; Goldwasser, E.
Mol. Cell. Biol. 6, 842-848, 1986
A;Title: Cloning, sequencing, and evolutionary analysis of the mouse erythropoietin gene
A;Reference number: A24901; MUID:87039104; PMID:3022133
A;Accession: A24901
A;Molecule type: DNA
A;Residues: 1-67,'P',69-192 <MCD>
A;Cross-references: GB:M12930; NID:g193086; PIDN:AAA37570.1; PID:g387152
C;Comment: Erythropoietin is produced by kidney or liver of adult mammals and by liver of
C;Genetics:
A;Introns: 5/1; 52/3; 81/3; 141/3
C;Function:
A;Description: the primary inducer of erythrocyte formation
C;Superfamily: erythropoietin
C;Keywords: erythropoiesis; glycoprotein; hormone; kidney; liver
F;1-26/Domain: signal sequence #status predicted <SIG>
F;27-192/Product: erythropoietin #status predicted <MAT>
F;33-187,55-165/Disulfide bonds: #status predicted
F;50,64,109/Binding site: carbohydrate (Asn) (covalent) #status predicted
```

```
  Query Match             80.5%;  Score 681;  DB 1;  Length 192;
  Best Local Similarity   79.4%;  Pred. No. 1e-57;
  Matches  131;  Conservative   14;  Mismatches   20;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              |||||||||||||||:||||||||:| ||||    |:||||| ||||||||||||| :||
Db         27 APPRLICDSRVLERYILEAKEAENVTMGCAEGPRLSENITVADTKVNFYAWKRMEVEEQA 86

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              :||||||:|||||:|: |||| ||||| | ||||:|||:|||||||:||| |||||| :|
Db         87 IEVWQGLSLLSEAILQAQALLANSSQPPETLQLHIDKAISGLRSLTSLLRVLGAQKELMS 146

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||    |||||:| ||| ||||||:|||||||||||||| || ||
Db        147 PPDTTPPAPLRTLTVDTFCKLFRVYANFLRGKLKLYTGEVCRRGD 191


RESULT 8
JC7699
erythropoietin - rabbit
C;Species: Oryctolagus cuniculus (domestic rabbit)
C;Date: 30-Sep-2001 #sequence_revision 30-Sep-2001 #text_change 22-Oct-2001
C;Accession: JC7699
R;Vilalta, A.; Wu, D.; Margalith, M.; Hobart, P.
Biochem. Biophys. Res. Commun. 284, 823-827, 2001
A;Title: Rabbit EPO gene and cDNA: Expression of rabbit EPO after intramuscular injectio
A;Reference number: JC7699; MUID:21290682; PMID:11396976
A;Contents: Kidney
A;Accession: JC7699
A;Molecule type: DNA
A;Residues: 1-195 <VIL>
A;Cross-references: GB:AF290943
C;Comment: This protein, a heavily glycosylated 34K protein produced in the fetal liver
cytes.
C;Genetics:
A;Gene: epo
C;Superfamily: erythropoietin
C;Keywords: glycoprotein; kidney

  Query Match             80.4%;  Score 680.5;  DB 2;  Length 195;
  Best Local Similarity   81.3%;  Pred. No. 1.2e-57;
  Matches  135;  Conservative   12;  Mismatches   18;  Indels    1;  Gaps    1;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              || |||||||||||:||||||||:| |||| ||| ||||||||||: ||: | |: |
Db         29 APARLICDSRVLERYILEAKEAENVTMGCAEGCSLGENITVPDTKVNFHHWKKSEAGRHA 88

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              |||||||||||||:|| |||| |||   | ||:|||||||||||||:|||||| ||||:|
Db         89 VEVWQGLALLSEAMLRSQALLANSSQLPETLQVHVDKAVSGLRSLTSLLRALGVQKEAVS 148

Qy        121 PPDAA-SAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              ||:|| |||||||: |||  ||||:||||||||||||||||| ||
Db        149 PPEAASSAAPLRTVAADTLCKLFRIYSNFLRGKLKLYTGEACRRGD 194


RESULT 9
I46578
erythropoietin - pig (fragment)
C;Species: Sus scrofa domestica (domestic pig)
C;Date: 21-Feb-1997 #sequence_revision 21-Feb-1997 #text_change 09-Jul-2004
C;Accession: I46578
R;Wen, D.; Boissel, J.
Blood 82, 1507-1516, 1993
A;Title: Erythropoietin structure-function relationships: High degree of sequence homolo
A;Reference number: I46083; MUID:93372347; PMID:8364201
A;Accession: I46578
A;Status: preliminary; translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
A;Residues: 1-190 <WEN>
A;Cross-references: UNIPROT:P49157; GB:L10607; NID:g164445; PIDN:AAA31029.1; PID:g164446
C;Superfamily: erythropoietin

  Query Match             80.1%;  Score 678;  DB 2;  Length 190;
  Best Local Similarity   82.0%;  Pred. No. 2e-57;
  Matches  137;  Conservative    7;  Mismatches   21;  Indels    2;  Gaps    1;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||:||||| || | |||| || :|||||||||||||||||||| |||
Db         23 APPRLICDSRVLERYILEAKEGENATMGCAESCSFSENITVPDTKVNFYAWKRMEVQQQA 82

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              :|||||||||||:|:||||| ||||| | ||||||||||||||:||||||||||||
Db         83 MEVWQGLALLSEAILQGQALLANSSQPSEALQLHVDKAVSGLRSLTSLLRALGAQKEAIP 142

Qy        121 PPDA--ASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||  :|| ||||   ||  |||| |||||||| ||||||||  |
Db        143 LPDASPSSATPLRTFAVDTLCKLFRNYSNFLRGKLTLYTGEACRRRD 189


RESULT 10
I46199
erythropoietin - dog (fragment)
C;Species: Canis lupus familiaris (dog)
C;Date: 21-Feb-1997 #sequence_revision 21-Feb-1997 #text_change 09-Jul-2004
C;Accession: I46199
R;Wen, D.; Boissel, J.
Blood 82, 1507-1516, 1993
A;Title: Erythropoietin structure-function relationships: High degree of sequence homolo
A;Reference number: I46083; MUID:93372347; PMID:8364201
A;Accession: I46199
A;Status: preliminary; translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
A;Residues: 1-175 <WEN>
A;Cross-references: UNIPROT:P33707; GB:L13027; NID:g290087; PIDN:AAA30842.1; PID:g552347
C;Superfamily: erythropoietin

  Query Match             75.4%;  Score 638;  DB 2;  Length 175;
  Best Local Similarity   81.0%;  Pred. No. 1.2e-53;
  Matches  124;  Conservative   13;  Mismatches   16;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||:|||:||||:| |||: || :|||||||||||| ||||:|||||
Db         23 APPRLICDSRVLERYILEAREAENVTMGCAQGCSFSENITVPDTKVNFYTWKRMDVGQQA 82

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              :|||||||||||:|||||| |:||| |  ||||||||| |||||:|||||||||:|
Db         83 LEVWQGLALLSEAILRGQALLANASQPSETPQLHVDKAVSSLRSLTSLLRALGAQKEAMS 142

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKL 153
              |: || ||||| | ||  ||||:|||||||||
Db        143 LPEEASPAPLRTFTVDTLCKLFRIYSNFLRGKL 175


RESULT 11
G02729
thrombopoietin - human
C;Species: Homo sapiens (man)
C;Date: 21-Dec-1996 #sequence_revision 06-Jun-1997 #text_change 05-Nov-1999
C;Accession: G02729
R;Im, S.
submitted to the EMBL Data Library, May 1996
A;Reference number: H01637
A;Accession: G02729
A;Status: preliminary; translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
A;Residues: 1-353 <IMX>
A;Cross-references: EMBL:U59493; NID:g1401245; PIDN:AAB03392.1; PID:g1401246
C;Genetics:
A;Gene: hTPO

  Query Match             10.6%;  Score 90;  DB 2;  Length 353;
  Best Local Similarity   26.3%;  Pred. No. 0.71;
  Matches   41;  Conservative   20;  Mismatches   75;  Indels   20;  Gaps    5;
```

```
Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              |||   || ||| : | ::    :  : | |   |   : :|    :   ||      :|
Db         24 APP--ACDLRVLSKLLRDSHVLHSKLSQCPEVHPLPTPVLLPAVDFSLGEWKTQMEETKA 81

Qy         61 VEVWQGLALLSEAVL--RGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEA 118
               ::   : || | |:  |||       |      |   |   :  |:||      || |
Db         82 QDILGAVTLLLEGVMAARGQLGPTCLSSLLGQLSEQVRLLLGALQSL------LGTQ--- 132

Qy        119 ISPPDAASAAPLRTITADTFRKLFRVYSNFLRGKLK 154
                ||        ||        :|  : : ||||::
Db        133 -LPPQG------RTTAHKDPNAIFLSFQHLLRGKVR 161


RESULT 12
I80105
thrombopoietin precursor - human
N;Alternate names: c-MPL ligand; megakaryocyte growth and development factor precursor
C;Species: Homo sapiens (man)
C;Date: 24-May-1996 #sequence_revision 24-May-1996 #text_change 09-Jul-2004
C;Accession: I59281; I80105; S45331; S48740; I38672; I52610
R;Foster, D.C.; Sprecher, C.A.; Grant, F.J.; Kramer, J.M.; Kuijper, J.L.; Holly, R.D.; W
Proc. Natl. Acad. Sci. U.S.A. 91, 13023-13027, 1994
A;Title: Human thrombopoietin: gene structure, cDNA sequence, expression, and chromosoma
A;Reference number: I59281; MUID:95108091; PMID:7809166
A;Accession: I59281
A;Status: translated from GB/EMBL/DDBJ
A;Molecule type: DNA
A;Residues: 1-353 <RE2>
A;Cross-references: UNIPROT:P40225; GB:L36051; NID:g533214; PIDN:AAC37568.1; PID:g533215
A;Accession: I80105
A;Status: translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
A;Residues: 1-353 <RES>
A;Cross-references: GB:L36052; NID:g533216; PIDN:AAC37566.1; PID:g533217
R;de Sauvage, F.J.; Hass, P.E.; Spencer, S.D.; Malloy, B.E.; Gurney, A.L.; Spencer, S.A.
D.V.; Eaton, D.L.
Nature 369, 533-538, 1994
A;Title: Stimulation of megakaryocytopoiesis and thrombopoiesis by the c-Mpl ligand.
A;Reference number: S45331; MUID:94261202; PMID:8202154
A;Accession: S45331
A;Status: preliminary
A;Molecule type: mRNA
A;Residues: 1-353 <SAU>
A;Cross-references: GB:L33410; NID:g506826; PIDN:AAA59857.1; PID:g506827
R;Sohma, Y.; Akahori, H.; Seki, N.; Hori, T.; Ogami, K.; Kato, T.; Shimada, Y.; Kawamura
FEBS Lett. 353, 57-61, 1994
A;Title: Molecular cloning and chromosomal localization of the human thrombopoietin gene
A;Reference number: S48740; MUID:95010765; PMID:7926023
A;Accession: S48740
A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-353 <SOH>
A;Cross-references: GB:D32046; NID:g577319; PIDN:BAA06807.1; PID:g577320
R;Bartley, T.D.; Bogenberger, J.; Hunt, P.; Li, Y.S.; Lu, H.S.; Martin, F.; Chang, M.S.;
Cell 77, 1117-1124, 1994
A;Title: Identification and cloning of a megakaryocyte growth and development factor tha
A;Reference number: A54463; MUID:94291201; PMID:8020099
A;Accession: I38672
A;Status: preliminary
A;Molecule type: mRNA
A;Residues: 1-112,'E',114-353 <RE3>
A;Cross-references: EMBL:U11025; NID:g511223; PIDN:AAA50553.1; PID:g558078
R;Gurney, A.L.; Kuang, W.J.; Xie, M.H.; Malloy, B.E.; Eaton, D.L.; de Sauvage, F.J.
Blood 85, 981-988, 1995
A;Title: Genomic structure, chromosomal localization, and conserved alternative splice f
A;Reference number: I52610; MUID:95152076; PMID:7849319
A;Accession: I52610
A;Status: preliminary; translated from GB/EMBL/DDBJ
A;Molecule type: DNA
A;Residues: 1-353 <RE4>
A;Cross-references: GB:S76771; NID:g914225; PIDN:AAB33390.1; PID:g914226
C;Genetics:
A;Gene: GDB:THPO; MGDF
A;Cross-references: GDB:374007; OMIM:600044
A;Map position: 3q26.3-3q27
A;Introns: 5/1; 47/3; 76/3; 132/3
C;Keywords: alternative splicing; cytokine; glycoprotein

  Query Match             10.5%;  Score 89;  DB 2;  Length 353;
  Best Local Similarity   26.3%;  Pred. No. 0.88;
  Matches   41;  Conservative   20;  Mismatches   75;  Indels   20;  Gaps    5;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              |||   || ||| : | ::    :  : | |   |   : :|    :   ||      :|
Db         24 APP--ACDLRVLSKLLRDSHVLHSRLSQCPEVHPLPTPVLLPAVDFSLGEWKTQMEETKA 81

Qy         61 VEVWQGLALLSEAVL--RGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEA 118
               ::   : || | |:  |||       |      |   |   :  |:||      || |
Db         82 QDILGAVTLLLEGVMAARGQLGPTCLSSLLGQLSGQVRLLLGALQSL------LGTQ--- 132

Qy        119 ISPPDAASAAPLRTITADTFRKLFRVYSNFLRGKLK 154
                ||        ||        :|  : : ||||::
Db        133 -LPPQG------RTTAHKDPNAIFLSFQHLLRGKVR 161


RESULT 13
AB0323
ribonucleoside-diphosphate reductase (EC 1.17.4.1) beta chain [imported] - Yersinia pest
C;Species: Yersinia pestis
C;Date: 02-Nov-2001 #sequence_revision 02-Nov-2001 #text_change 09-Jul-2004
C;Accession: AB0323
R;Parkhill, J.; Wren, B.W.; Thomson, N.R.; Titball, R.W.; Holden, M.T.G.; Prentice, M.B.,
deno-Tarraga, A.M.; Chillingworth, T.; Cronin, A.; Davies, R.M.; Davis, P.; Dougan, G.; E
il, M.; Rutherford, K.; Simmonds, M.; Skelton, J.; Stevens, K.; Whitehead, S.; Barrell, E
Nature 413, 523-527, 2001
A;Title: Genome sequence of Yersinia pestis, the causative agent of plague.
A;Reference number: AB0001; MUID:21470413; PMID:11586360
A;Accession: AB0323
A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-323 <KUR>
A;Cross-references: UNIPROT:Q8ZDC8; GB:AL590842; PIDN:CAC92889.1; PID:g15980631; GSPDB:GN
C;Genetics:
A;Gene: nrdF
C;Superfamily: ribonucleoside-diphosphate reductase beta
C;Keywords: oxidoreductase

  Query Match             10.4%;  Score 88;  DB 2;  Length 323;
  Best Local Similarity   25.2%;  Pred. No. 0.99;
  Matches   34;  Conservative   20;  Mismatches   59;  Indels   22;  Gaps    5;

Qy         38 NITVPDTKVNFYAWKRMEVGQQAVEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVD- 96
              |:  | |:::   | ::|   : :|||    | |   |  :  | |    |   | |
Db          2 NVVKPITRISAINWNKIE-DDKDLEVWN--RLTSNFWLPEKVPLSNDIPSWATLTPHEQQ 58

Qy         97 ---KAVSGLRSLTTLLRALGAQ---KEAISPPDAASAAPLRTITADTFRKLFRVYSNFLR 150
                 :  :||  | |:   |||    |:||:| : |  : :  : |   |    ::|
Db         59 LTIRVFTGLTLLDTIQNTLGAPALIKDAITPHEEAIFSNISFMEAVHARSYSSIFSTL-- 116

Qy        151 GKLKLYTGEACRTGD 165
                       | | |
Db        117 ----------CLTSD 121


RESULT 14
AE0959
Solute binding receptor protein [imported] - Salmonella enterica subsp. enterica serovar
C;Species: Salmonella enterica subsp. enterica serovar Typhi
A;Note: this species has also been called Salmonella typhi
C;Date: 09-Nov-2001 #sequence_revision 09-Nov-2001 #text_change 18-Nov-2002
C;Accession: AE0959
R;Parkhill, J.; Dougan, G.; James, K.D.; Thomson, N.R.; Pickard, D.; Wain, J.; Churcher,
th, T.; Connerton, P.; Cronin, A.; Davis, P.; Davies, R.M.; Dowd, L.; White, N.; Farrar,
, S.; Moule, S.; O'Gaora, P.
Nature 413, 848-852, 2001
A;Authors: Parry, C.; Quail, M.; Rutherford, K.; Simmonds, M.; Skelton, J.; Stevens, K.;
```

```
A;Title: Complete genome sequence of a multiple drug resistant Salmonella enterica serov
A;Reference number: AB0502; MUID:21534947; PMID:11677608
A;Accession: AE0959
A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-346 <PAR>
A;Cross-references: GB:AL513382; PIDN:CAD03169.1; PID:g16504804; GSPDB:GN00176
C;Genetics:
A;Gene: STY3952

  Query Match             10.3%;  Score 87.5;  DB 2;  Length 346;
  Best Local Similarity   26.7%;  Pred. No. 1.2;
  Matches   44;  Conservative   22;  Mismatches   48;  Indels   51;  Gaps    9;

Qy         10 RVLERYLLEAKEAENITTG--CAEHCSLNE--NITVPDTKVNFYAWKRMEVGQQAVEVWQ 65
              | | : :||      |:  |   |   :: |  |:| | | |:||           :|::
Db        217 RNLLQEMLERHPDANVVAGSAIAAEAAMGEGRNLTTPLTIVSFYL---------THQVYR 267

Qy         66 GLALLSEAVLRGQALLVNSSQ-PWEPLQLHVDKAVSGLRSLTTLLRALGAQ--KEAISPP 122
              ||       ||  |:  | |  |:             |  ::|  :: | |   | ||||
Db        268 GLK-------RGHILMALSDQMAWQ----------GELAITQSIKVLQGQPVPENISPP 309

Qy        123 -------DAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEA 160
                   :| ||   |:::   || ::          |  || ||
Db        310 VLILTHNNADSARVRRSLSPPGFRPVY----------LYQYTSEA 344


RESULT 15
A55530
megakaryocyte growth and development factor, long form - human
N;Alternate names: MPL ligand, long form
C;Species: Homo sapiens (man)
C;Date: 20-Feb-1995 #sequence_revision 20-Feb-1995 #text_change 07-May-1999
C;Accession: A55530
R;Chang, M.; McNinch, J.; Basu, R.; Shutter, J.; Hsu, R.; Perkins, C.; Mar, V.; Suggs, S
J. Biol. Chem. 270, 511-514, 1995
A;Title: Cloning and characterization of the human megakoryocyte growth and development
A;Reference number: A55530; MUID:95122483; PMID:7822271
A;Accession: A55530
A;Status: preliminary; not compared with conceptual translation
A;Molecule type: DNA
A;Residues: 1-286 <CHA>
A;Cross-references: GB:U17071
C;Genetics:
A;Gene: MGDF
A;Map position: 3q26.3
C;Keywords: alternative splicing; cytokine

  Query Match             10.2%;  Score 86;  DB 2;  Length 286;
  Best Local Similarity   26.6%;  Pred. No. 1.3;
  Matches   41;  Conservative   18;  Mismatches   75;  Indels   20;  Gaps    5;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              |||   || ||| : | ::    :  : | |   |   : :|    :   ||      :|
Db         24 APP--ACDLRVLSKLLRDSHVLHSRLSQCPEVHPLPTPVLLPAVDFSLGEWKTQMEETKA 81

Qy         61 VEVWQGLALLSEAVL--RGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEA 118
               ::   : || | |:  |||      |      |   |   :  |:||      || |
Db         82 QDILGAVTLLLEGVMAARGQLGPTCLSSLLGQLSGQVRLLLGALQSL------LGTQ--- 132

Qy        119 ISPPDAASAAPLRTITADTFRKLFRVYSNFLRGK 152
               ||       ||        :|  : : ||||
Db        133 -LPPQG------RTTAHKDPNAIFLSFQHLLRGK 159


Search completed: August 23, 2005, 13:59:19
Job time : 41 secs
```

GenCore version 5.1.6
Copyright (c) 1993 - 2005 Compugen Ltd.

OM protein - protein search, using sw model

Run on: August 23, 2005, 13:52:33 ; Search time 43 Seconds
(without alignments)
286.444 Million cell updates/sec

Title: US-10-706-701-1
Perfect score: 846
Sequence: 1 APPRLICDSRVLERYLLEAK.....SNFLRGKLKLYTGEACRTGD 165

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 513545 seqs, 74649064 residues

Total number of hits satisfying chosen parameters: 513545

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : Issued_Patents_AA:*
1: /cgn2_6/ptodata/1/iaa/5A_COMB.pep:*
2: /cgn2_6/ptodata/1/iaa/5B_COMB.pep:*
3: /cgn2_6/ptodata/1/iaa/6A_COMB.pep:*
4: /cgn2_6/ptodata/1/iaa/6B_COMB.pep:*
5: /cgn2_6/ptodata/1/iaa/PCTUS_COMB.pep:*
6: /cgn2_6/ptodata/1/iaa/backfiles1.pep:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Query Match	Length	DB	ID	Description
1	846	100.0	165	3	US-09-604-871-1	Sequence 1, Appli
2	846	100.0	165	4	US-09-604-938-1	Sequence 1, Appli
3	846	100.0	165	4	US-09-830-967-1	Sequence 1, Appli
4	846	100.0	166	1	US-08-318-193-70	Sequence 70, Appl
5	846	100.0	166	3	US-09-604-871-2	Sequence 2, Appli
6	846	100.0	166	4	US-09-604-938-2	Sequence 2, Appli
7	846	100.0	166	4	US-09-462-941-2	Sequence 2, Appli
8	846	100.0	166	5	PCT-US94-04361-37	Sequence 37, Appl
9	846	100.0	193	1	US-07-903-220-1	Sequence 1, Appli
10	846	100.0	193	2	US-08-883-795A-34	Sequence 34, Appl
11	846	100.0	193	4	US-09-552-265B-4	Sequence 4, Appli
12	846	100.0	193	4	US-09-813-775C-4	Sequence 4, Appli
13	843	99.6	165	4	US-09-554-451-8	Sequence 8, Appli
14	843	99.6	412	4	US-09-366-009-34	Sequence 34, Appl
15	843	99.6	412	4	US-08-809-156B-34	Sequence 34, Appl
16	838	99.1	193	4	US-09-552-265B-2	Sequence 2, Appli
17	838	99.1	193	4	US-09-813-775C-2	Sequence 2, Appli
18	834	98.6	193	4	US-09-552-265B-5	Sequence 5, Appli
19	834	98.6	193	4	US-09-813-775C-5	Sequence 5, Appli
20	830	98.1	166	5	PCT-US94-04361-45	Sequence 45, Appl
21	825	97.5	166	4	US-09-552-265B-30	Sequence 30, Appl
22	825	97.5	166	4	US-09-813-775C-30	Sequence 30, Appl
23	825	97.5	193	4	US-09-552-265B-46	Sequence 46, Appl
24	825	97.5	193	4	US-09-813-775C-46	Sequence 46, Appl
25	824	97.4	166	4	US-09-552-265B-22	Sequence 22, Appl
26	824	97.4	166	4	US-09-552-265B-32	Sequence 32, Appl
27	824	97.4	166	4	US-09-813-775C-22	Sequence 22, Appl
28	824	97.4	166	4	US-09-813-775C-32	Sequence 32, Appl
29	824	97.4	193	4	US-09-552-265B-38	Sequence 38, Appl
30	824	97.4	193	4	US-09-552-265B-48	Sequence 48, Appl
31	824	97.4	193	4	US-09-813-775C-38	Sequence 38, Appl
32	824	97.4	193	4	US-09-813-775C-48	Sequence 48, Appl
33	822	97.2	166	4	US-09-552-265B-20	Sequence 20, Appl
34	822	97.2	166	4	US-09-552-265B-24	Sequence 24, Appl
35	822	97.2	166	4	US-09-813-775C-20	Sequence 20, Appl
36	822	97.2	166	4	US-09-813-775C-24	Sequence 24, Appl
37	822	97.2	193	4	US-09-552-265B-36	Sequence 36, Appl
38	822	97.2	193	4	US-09-552-265B-40	Sequence 40, Appl
39	822	97.2	193	4	US-09-813-775C-36	Sequence 36, Appl
40	822	97.2	193	4	US-09-813-775C-40	Sequence 40, Appl
41	821	97.0	166	4	US-09-552-265B-26	Sequence 26, Appl
42	821	97.0	166	4	US-09-552-265B-31	Sequence 31, Appl
43	821	97.0	166	4	US-09-813-775C-26	Sequence 26, Appl
44	821	97.0	166	4	US-09-813-775C-31	Sequence 31, Appl
45	821	97.0	193	4	US-09-552-265B-42	Sequence 42, Appl

ALIGNMENTS

RESULT 1
US-09-604-871-1
; Sequence 1, Application US/09604871
; Patent No. 6340742
; GENERAL INFORMATION:
; APPLICANT: Burg, Josef
; APPLICANT: Hilger, Bernd
; APPLICANT: Josel, Hans-Peter
; TITLE OF INVENTION: ERYTHROPOIETIN CONJUGATES
; FILE REFERENCE: 1098 nonprovisional
; CURRENT APPLICATION NUMBER: US/09/604,871
; CURRENT FILING DATE: 2000-06-28
; PRIOR APPLICATION NUMBER: 60/151,454
; PRIOR FILING DATE: 1999-08-30
; PRIOR APPLICATION NUMBER: 60/147,452
; PRIOR FILING DATE: 1999-08-05
; PRIOR APPLICATION NUMBER: 60/142,243
; PRIOR FILING DATE: 1999-07-02
; NUMBER OF SEQ ID NOS: 3
; SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 1
; LENGTH: 165
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-604-871-1

Query Match 100.0%; Score 846; DB 3; Length 165;
Best Local Similarity 100.0%; Pred. No. 1.4e-99;
Matches 165; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```
Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
```

RESULT 2
US-09-604-938-1
; Sequence 1, Application US/09604938
; Patent No. 6583272
; GENERAL INFORMATION:
; APPLICANT: Bailon, Pascal
; TITLE OF INVENTION: ERYTHROPOIETIN CONJUGATES

```
;  FILE REFERENCE:  1097 nonprovisional
;  CURRENT APPLICATION NUMBER: US/09/604,938
;  CURRENT FILING DATE:  2000-06-27
;  PRIOR APPLICATION NUMBER:  60/166,151
;  PRIOR FILING DATE:  1999-11-17
;  PRIOR APPLICATION NUMBER:  60/151,548
;  PRIOR FILING DATE:  1999-08-13
;  PRIOR APPLICATION NUMBER:  60/150,225
;  PRIOR FILING DATE:  1999-08-23
;  PRIOR APPLICATION NUMBER:  60/142,254
;  PRIOR FILING DATE:  1999-07-02
;  NUMBER OF SEQ ID NOS:  3
;  SOFTWARE:  PatentIn Ver. 2.1
; SEQ ID NO 1
;   LENGTH: 165
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-09-604-938-1

  Query Match           100.0%;  Score 846;  DB 4;  Length 165;
  Best Local Similarity  100.0%;  Pred. No. 1.4e-99;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 3
US-09-830-967-1
; Sequence 1, Application US/09830967
; Patent No. 6777205
; GENERAL INFORMATION:
;  APPLICANT: Sterrenbeld Biotechnologie No. 6777205th America, Inc.
;  APPLICANT:  Carcagno, Carlos Miguel
;  APPLICANT:  Criscuolo, Marcelo
;  APPLICANT:  Melo, Carlos
;  APPLICANT:  Vidal, Juan Alejandro
;  TITLE OF INVENTION: Host Cells Expressing Recombinant Human Erythropoietin
;  FILE REFERENCE: 1909.0020002
;  CURRENT APPLICATION NUMBER: US/09/830,967
;  CURRENT FILING DATE:  1999-11-08
;  PRIOR APPLICATION NUMBER: AR 99-01-00679
;  PRIOR FILING DATE: 1999-02-23
;  PRIOR APPLICATION NUMBER: AR 98-01-05609
;  PRIOR FILING DATE: 1998-11-06
;  NUMBER OF SEQ ID NOS: 5
;  SOFTWARE: PatentIn Ver. 2.0
; SEQ ID NO 1
;   LENGTH: 165
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-09-830-967-1

  Query Match           100.0%;  Score 846;  DB 4;  Length 165;
  Best Local Similarity  100.0%;  Pred. No. 1.4e-99;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 4
US-08-318-193-70
; Sequence 70, Application US/08318193
; Patent No. 5641663
;  GENERAL INFORMATION:
;    APPLICANT:  GARVIN, Robert T.
;    APPLICANT:  MALEK, Lawrence T.
;    TITLE OF INVENTION:  AN EXPRESSION SYSTEM FOR THE SECRETION
;    TITLE OF INVENTION:  OF BIOACTIVE HUMAN GRANULOCYTE MACROPHAGE COLONY
;    TITLE OF INVENTION:  STIMULATING FACTOR (GM-CSF) AND OTHER HETEROLOGOUS
;    TITLE OF INVENTION:  PROTEINS FROM STREPTOMYCES
;    NUMBER OF SEQUENCES:  91
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Foley & Lardner
;      STREET:  1800 Diagonal Road, Suite 500
;      CITY:  Alexandria
;      STATE:  Virginia
;      COUNTRY:  USA
;      ZIP:  22313-0299
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  PatentIn Release #1.0, Version #1.25
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/318,193
;      FILING DATE:
;      CLASSIFICATION:  435
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  US/07/935,314
;      FILING DATE:
;      APPLICATION NUMBER:  US 07/224,568
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  BENT, Stephen A.
;      REGISTRATION NUMBER:  29,768
;      REFERENCE/DOCKET NUMBER:  18740/116 CACO
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  (703)836-9300
;      TELEFAX:  (703)683-4109
;      TELEX:  899149
;  INFORMATION FOR SEQ ID NO:  70:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  166 amino acids
;      TYPE:  amino acid
;      TOPOLOGY:  linear
;    MOLECULE TYPE:  protein
US-08-318-193-70

  Query Match           100.0%;  Score 846;  DB 1;  Length 166;
  Best Local Similarity  100.0%;  Pred. No. 1.5e-99;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 5
US-09-604-871-2
```

```
; Sequence 2, Application US/09604871
; Patent No. 6340742
; GENERAL INFORMATION:
;  APPLICANT:  Burg, Josef
;  APPLICANT:  Hilger, Bernd
;  APPLICANT:  Josel, Hans-Peter
;  TITLE OF INVENTION:  ERYTHROPOIETIN CONJUGATES
;  FILE REFERENCE:  1098 nonprovisional
;  CURRENT APPLICATION NUMBER: US/09/604,871
;  CURRENT FILING DATE:  2000-06-28
;  PRIOR APPLICATION NUMBER:  60/151,454
;  PRIOR FILING DATE:  1999-08-30
;  PRIOR APPLICATION NUMBER:  60/147,452
;  PRIOR FILING DATE:  1999-08-05
;  PRIOR APPLICATION NUMBER:  60/142,243
;  PRIOR FILING DATE:  1999-07-02
;  NUMBER OF SEQ ID NOS:  3
;  SOFTWARE:  PatentIn Ver. 2.1
; SEQ ID NO 2
;   LENGTH: 166
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-09-604-871-2

  Query Match             100.0%;  Score 846;  DB 3;  Length 166;
  Best Local Similarity   100.0%;  Pred. No. 1.5e-99;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 6
US-09-604-938-2
; Sequence 2, Application US/09604938
; Patent No. 6583272
; GENERAL INFORMATION:
;  APPLICANT:  Bailon, Pascal
;  TITLE OF INVENTION:  ERYTHROPOIETIN CONJUGATES
;  FILE REFERENCE:  1097 nonprovisional
;  CURRENT APPLICATION NUMBER: US/09/604,938
;  CURRENT FILING DATE:  2000-06-27
;  PRIOR APPLICATION NUMBER:  60/166,151
;  PRIOR FILING DATE:  1999-11-17
;  PRIOR APPLICATION NUMBER:  60/151,548
;  PRIOR FILING DATE:  1999-08-13
;  PRIOR APPLICATION NUMBER:  60/150,225
;  PRIOR FILING DATE:  1999-08-23
;  PRIOR APPLICATION NUMBER:  60/142,254
;  PRIOR FILING DATE:  1999-07-02
;  NUMBER OF SEQ ID NOS:  3
;  SOFTWARE:  PatentIn Ver. 2.1
; SEQ ID NO 2
;   LENGTH: 166
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-09-604-938-2

  Query Match             100.0%;  Score 846;  DB 4;  Length 166;
  Best Local Similarity   100.0%;  Pred. No. 1.5e-99;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 7
US-09-462-941-2
; Sequence 2, Application US/09462941
; Patent No. 6608183
; GENERAL INFORMATION:
;  APPLICANT: Cox III, George N
;  APPLICANT:  Bolder Biotechnology, Inc.
;  TITLE OF INVENTION: Derivatives of Growth Hormone and Related Proteins
;  FILE REFERENCE: 4152-1-PUS
;  CURRENT APPLICATION NUMBER: US/09/462,941
;  CURRENT FILING DATE:  2000-01-14
;  PRIOR APPLICATION NUMBER: 60/052,516
;  PRIOR FILING DATE: 1997-07-14
;  NUMBER OF SEQ ID NOS: 41
;  SOFTWARE: PatentIn Ver. 2.0
; SEQ ID NO 2
;   LENGTH: 166
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-09-462-941-2

  Query Match             100.0%;  Score 846;  DB 4;  Length 166;
  Best Local Similarity   100.0%;  Pred. No. 1.5e-99;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 8
PCT-US94-04361-37
; Sequence 37, Application PC/TUS9404361
;  GENERAL INFORMATION:
;    APPLICANT:  Brigham and Women's Hospital
;    APPLICANT:  75 Francis Street
;    APPLICANT:  Boston, MA 02115
;    APPLICANT:  Bunn, H. Franklin
;    APPLICANT:  Wen, Danyi
;    APPLICANT:  Showers, Mark O.
;    TITLE OF INVENTION:  Erythropoietin Muteins With Enhanced
;    TITLE OF INVENTION:  Activity
;    NUMBER OF SEQUENCES:  59
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Sterne, Kessler, Goldstein & Fox
;      STREET:  1100 New York Avenue, Suite 600
;      CITY:  Washington
;      STATE:  D.C.
;      COUNTRY:  U.S.A.
;      ZIP:  20005-3934
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
```

```
;      SOFTWARE:  PatentIn Release #1.0, Version #1.25
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  PCT/US94/04361
;      FILING DATE:  Herewith
;      CLASSIFICATION:
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  08/049,802
;      FILING DATE:  21-APR-1993
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Cimbala, Michele A.
;      REGISTRATION NUMBER:  33,851
;      REFERENCE/DOCKET NUMBER:  0627.336PC01
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  (202) 371-2600
;      TELEFAX:  (202) 371-2540
;  INFORMATION FOR SEQ ID NO:  37:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  166 amino acids
;      TYPE:  amino acid
;      TOPOLOGY:  both
PCT-US94-04361-37

  Query Match             100.0%;  Score 846;  DB 5;  Length 166;
  Best Local Similarity   100.0%;  Pred. No. 1.5e-99;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 9
US-07-903-220-1
; Sequence 1, Application US/07903220
; Patent No. 5322837
;  GENERAL INFORMATION:
;    APPLICANT:  Hewick, Rodney M.
;    TITLE OF INVENTION:  METHOD FOR THE PURIFICATION OF
;    TITLE OF INVENTION:  ERYTHROPOIETIN AND ERYTHROPOIETIN COMPOSITION
;    NUMBER OF SEQUENCES:  1
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Paul H. Heller
;      STREET:  Kenyon & Kenyon, One Broadway
;      CITY:  New York
;      STATE:  New York
;      COUNTRY:  USA
;      ZIP:  10004
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  PatentIn Release #1.0, Version #1.25
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/07/903,220
;      FILING DATE:  19920731
;      CLASSIFICATION:  530
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Brown, Scott A.
;      REGISTRATION NUMBER:  32,724
;      REFERENCE/DOCKET NUMBER:  1248/27
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  (202) 429-1776
;      TELEFAX:  (202) 429-0796
;  INFORMATION FOR SEQ ID NO:  1:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  193 amino acids
;      TYPE:  AMINO ACID
;      TOPOLOGY:  linear
;    MOLECULE TYPE:  protein
;    HYPOTHETICAL:  NO
;    ORIGINAL SOURCE:
;      ORGANISM:  Homo sapiens
US-07-903-220-1

  Query Match             100.0%;  Score 846;  DB 1;  Length 193;
  Best Local Similarity   100.0%;  Pred. No. 1.9e-99;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 10
US-08-883-795A-34
; Sequence 34, Application US/08883795A
; Patent No. 5985607
;  GENERAL INFORMATION:
;    APPLICANT:  Delcuve, Genevieve
;    APPLICANT:  Awang, Gregor
;    TITLE OF INVENTION:  Recombinant DNA Molecules and Expression
;    TITLE OF INVENTION:  Vectors for Tissue Plasminogen Activator
;    NUMBER OF SEQUENCES:  39
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  BERESKIN & PARR
;      STREET:  40 King Street West
;      CITY:  Toronto
;      STATE:  Ontario
;      COUNTRY:  Canada
;      ZIP:  M5H 3Y2
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  PatentIn Release #1.0, Version #1.25
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/883,795A
;      FILING DATE:  27-JUN-1997
;      CLASSIFICATION:  435
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Gravelle, Micheline
;      REGISTRATION NUMBER:  40,261
;      REFERENCE/DOCKET NUMBER:  7841-062
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  (416) 364-7311
;      TELEFAX:  (416) 361-1398
;  INFORMATION FOR SEQ ID NO:  34:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  193 amino acids
;      TYPE:  amino acid
;      TOPOLOGY:  linear
;    MOLECULE TYPE:  protein
US-08-883-795A-34

  Query Match             100.0%;  Score 846;  DB 2;  Length 193;
  Best Local Similarity   100.0%;  Pred. No. 1.9e-99;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
```

```
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 11
US-09-552-265B-4
; Sequence 4, Application US/09552265B
; Patent No. 6555343
; GENERAL INFORMATION:
;  APPLICANT: DeSauvage, Frederick
;  APPLICANT:  Henner, Dennis, J.
;  TITLE OF INVENTION: No. 6555343el chimpanzee erythropoietin (chepo)
;  TITLE OF INVENTION:  polypeptides and nucleic acids encoding the same
;  FILE REFERENCE: GENENT.057CP1
;  CURRENT APPLICATION NUMBER: US/09/552,265B
;  CURRENT FILING DATE:  2000-04-19
;  PRIOR APPLICATION NUMBER: US 09/307307
;  PRIOR FILING DATE: 1999-05-17
;  NUMBER OF SEQ ID NOS: 49
;  SOFTWARE: FastSEQ for Windows Version 4.0
; SEQ ID NO 4
;   LENGTH: 193
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-09-552-265B-4

  Query Match             100.0%;  Score 846;  DB 4;  Length 193;
  Best Local Similarity   100.0%;  Pred. No. 1.9e-99;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 12
US-09-813-775C-4
; Sequence 4, Application US/09813775C
; Patent No. 6831060
; GENERAL INFORMATION:
;  APPLICANT: DeSauvage, Frederick
;  APPLICANT:  Henner, Dennis, J.
;  TITLE OF INVENTION: No. 6831060el chimpanzee erythropoietin
;  TITLE OF INVENTION:  polypeptides and nucleic acids encoding the same
;  FILE REFERENCE: GENENT.057CP2
;  CURRENT APPLICATION NUMBER: US/09/813,775C
;  CURRENT FILING DATE:  1999-05-07
;  PRIOR APPLICATION NUMBER: US 09/307307
;  PRIOR FILING DATE: 1999-05-07
;  PRIOR APPLICATION NUMBER: US 09/552265
;  PRIOR FILING DATE: 2000-04-19
;  NUMBER OF SEQ ID NOS: 52
;  SOFTWARE: FastSEQ for Windows Version 4.0
; SEQ ID NO 4
;   LENGTH: 193
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-09-813-775C-4

  Query Match             100.0%;  Score 846;  DB 4;  Length 193;
  Best Local Similarity   100.0%;  Pred. No. 1.9e-99;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 13
US-09-554-451-8
; Sequence 8, Application US/09554451
; Patent No. 6680207
;  GENERAL INFORMATION:
;       APPLICANT: Jonathan Paul MURPHY
;                  Anthony ATKINSON
;       TITLE OF INVENTION: Detection of Molecules in Samples
;       NUMBER OF SEQUENCES: 9
;       CORRESPONDENCE ADDRESS:
;            ADDRESSEE: Pillsbury Winthrop, L.L.P.
;            STREET: 1100 New York Ave., N.W.
;            CITY: Washington
;            STATE: D.C.
;            COUNTRY: U.S.A.
;            ZIP: 20005
;       COMPUTER READABLE FORM:
;            MEDIUM TYPE: Diskette
;            COMPUTER: IBM PC compatible
;            OPERATING SYSTEM: PC-DOS/MS-DOS
;            SOFTWARE: MS Word
;       CURRENT APPLICATION DATA:
;            APPLICATION NUMBER: US/09/554,451
;            FILING DATE: 15-May-2000
;            CLASSIFICATION: <Unknown>
;       PRIOR APPLICATION DATA:
;            APPLICATION NUMBER: PCT/GB98/03449
;            FILING DATE: No. 6680207ember 16, 1998
;            APPLICATION NUMBER: GB 9723955.2
;            FILING DATE: No. 6680207ember 14, 1997
;  INFORMATION FOR SEQ ID NO: 8:
;       SEQUENCE CHARACTERISTICS:
;            LENGTH: 165 amino acids
;            TYPE: amino acid
;            STRANDEDNESS: single
;            TOPOLOGY: linear
;       SEQUENCE DESCRIPTION: SEQ ID NO: 8:
US-09-554-451-8

  Query Match             99.6%;  Score 843;  DB 4;  Length 165;
  Best Local Similarity   99.4%;  Pred. No. 3.5e-99;
  Matches  164;  Conservative    1;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||:||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLQRYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
```

```
RESULT 14
US-09-366-009-34
; Sequence 34, Application US/09366009
; Patent No. 6426042
;   GENERAL INFORMATION:
;        APPLICANT: Asada, Kiyozo
;                   Uemori, Takashi
;                   Ueno, Takashi
;                   Koyama, No. 6426042uto
;                   Hashino, Kimikazu
;                   Kato, Ikunoshin
;        TITLE OF INVENTION: METHOD FOR GENE TRANSFER INTO TARGET
;                            CELLS WITH RETROVIRUS
;        NUMBER OF SEQUENCES: 39
;        CORRESPONDENCE ADDRESS:
;             ADDRESSEE: WEISER & ASSOCIATES
;             STREET: 230 South Fifteenth Street, Suite 500
;             CITY: Philadelphia
;             STATE: PA
;             COUNTRY: USA
;             ZIP: 19102
;        COMPUTER READABLE FORM:
;             MEDIUM TYPE: Floppy disk
;             COMPUTER: IBM PC compatible
;             OPERATING SYSTEM: PC-DOS/MS-DOS
;             SOFTWARE: PatentIn Release #1.0, Version #1.30
;        CURRENT APPLICATION DATA:
;             APPLICATION NUMBER: US/09/366,009
;             FILING DATE: 02-Aug-1999
;             CLASSIFICATION: <Unknown>
;        PRIOR APPLICATION DATA:
;             APPLICATION NUMBER: 08/809,156
;             FILING DATE: <Unknown>
;             APPLICATION NUMBER: JP 294382/1995
;             FILING DATE: 13-NOV-1995
;             APPLICATION NUMBER: JP 051847/1996
;             FILING DATE: 08-MAR-1996
;        ATTORNEY/AGENT INFORMATION:
;             NAME: Weiser, Gerard J.
;             REGISTRATION NUMBER: 19,763
;             REFERENCE/DOCKET NUMBER: 977.6507P
;        TELECOMMUNICATION INFORMATION:
;             TELEPHONE: 215-875-8383
;             TELEFAX: 215-875-8394
;   INFORMATION FOR SEQ ID NO: 34:
;        SEQUENCE CHARACTERISTICS:
;             LENGTH: 412 amino acids
;             TYPE: amino acid
;             STRANDEDNESS: <Unknown>
;             TOPOLOGY: linear
;        MOLECULE TYPE: peptide
;        SEQUENCE DESCRIPTION: SEQ ID NO: 34:
US-09-366-009-34

  Query Match             99.6%;  Score 843;  DB 4;  Length 412;
  Best Local Similarity   99.4%;  Pred. No. 1.5e-98;
  Matches  164;  Conservative    1;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              |||||||||||||:||||||||||||||||||||||||||||||||||||||||||||||
Db        233 APPRLICDSRVLQRYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 292

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        293 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 352

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        353 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 397


RESULT 15
US-08-809-156B-34
; Sequence 34, Application US/08809156B
; Patent No. 6472204
;  GENERAL INFORMATION:
;    APPLICANT:  Asada, Kiyozo
;    APPLICANT:  Uemori, Takashi
;    APPLICANT:  Ueno, Takashi
;    APPLICANT:  Koyama, No. 6472204uto
;    APPLICANT:  Hashino, Kimikazu
;    APPLICANT:  Kato, Ikunoshin
;    TITLE OF INVENTION:  METHOD FOR GENE TRANSFER INTO TARGET
;    TITLE OF INVENTION:  CELLS WITH RETROVIRUS
;    NUMBER OF SEQUENCES:  39
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  WEISER & ASSOCIATES
;      STREET:  230 South Fifteenth Street, Suite 500
;      CITY:  Philadelphia
;      STATE:  PA
;      COUNTRY:  USA
;      ZIP:  19102
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  PatentIn Release #1.0, Version #1.30
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/809,156B
;      FILING DATE:  07-MAR-1997
;      CLASSIFICATION:  435
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  PCT/JP96/03254
;      FILING DATE:  07-NOV-1996
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  JP 294382/1995
;      FILING DATE:  13-NOV-1995
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  JP 051847/1996
;      FILING DATE:  08-MAR-1996
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Weiser, Gerard J.
;      REGISTRATION NUMBER:  19,763
;      REFERENCE/DOCKET NUMBER:  977.6507P
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  215-875-8383
;      TELEFAX:  215-875-8394
;  INFORMATION FOR SEQ ID NO:  34:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  412 amino acids
;      TYPE:  amino acid
;      STRANDEDNESS:
;      TOPOLOGY:  linear
;    MOLECULE TYPE:  peptide
US-08-809-156B-34

  Query Match             99.6%;  Score 843;  DB 4;  Length 412;
  Best Local Similarity   99.4%;  Pred. No. 1.5e-98;
  Matches  164;  Conservative    1;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              |||||||||||||:||||||||||||||||||||||||||||||||||||||||||||||
Db        233 APPRLICDSRVLQRYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 292

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        293 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 352

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        353 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 397


Search completed: August 23, 2005, 14:00:07
Job time : 44 secs
```

THIS PAGE BLANK (USPTO)

GenCore version 5.1.6
Copyright (c) 1993 - 2005 Compugen Ltd.

OM protein - protein search, using sw model

Run on: August 23, 2005, 14:17:43 ; Search time 64 Seconds
(without alignments)
1009.558 Million cell updates/sec

Title: US-10-706-701-1
Perfect score: 846
Sequence: 1 APPRLICDSRVLERYLLEAK.....SNFLRGKLKLYTGEACRTGD 165

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 1759131 seqs, 391586102 residues

Total number of hits satisfying chosen parameters: 71

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 100%
Maximum Match 100%
Listing first 500 summaries

Database : Published_Applications_AA:*
1: /cgn2_6/ptodata/2/pubpaa/US07_PUBCOMB.pep:*
2: /cgn2_6/ptodata/2/pubpaa/PCT_NEW_PUB.pep:*
3: /cgn2_6/ptodata/2/pubpaa/US06_NEW_PUB.pep:*
4: /cgn2_6/ptodata/2/pubpaa/US06_PUBCOMB.pep:*
5: /cgn2_6/ptodata/2/pubpaa/US07_NEW_PUB.pep:*
6: /cgn2_6/ptodata/2/pubpaa/PCTUS_PUBCOMB.pep:*
7: /cgn2_6/ptodata/2/pubpaa/US08_NEW_PUB.pep:*
8: /cgn2_6/ptodata/2/pubpaa/US08_PUBCOMB.pep:*
9: /cgn2_6/ptodata/2/pubpaa/US09A_PUBCOMB.pep:*
10: /cgn2_6/ptodata/2/pubpaa/US09B_PUBCOMB.pep:*
11: /cgn2_6/ptodata/2/pubpaa/US09C_PUBCOMB.pep:*
12: /cgn2_6/ptodata/2/pubpaa/US09_NEW_PUB.pep:*
13: /cgn2_6/ptodata/2/pubpaa/US10A_PUBCOMB.pep:*
14: /cgn2_6/ptodata/2/pubpaa/US10B_PUBCOMB.pep:*
15: /cgn2_6/ptodata/2/pubpaa/US10C_PUBCOMB.pep:*
16: /cgn2_6/ptodata/2/pubpaa/US10D_PUBCOMB.pep:*
17: /cgn2_6/ptodata/2/pubpaa/US10E_PUBCOMB.pep:*
18: /cgn2_6/ptodata/2/pubpaa/US10_NEW_PUB.pep:*
19: /cgn2_6/ptodata/2/pubpaa/US11A_PUBCOMB.pep:*
20: /cgn2_6/ptodata/2/pubpaa/US11_NEW_PUB.pep:*
21: /cgn2_6/ptodata/2/pubpaa/US60_NEW_PUB.pep:*
22: /cgn2_6/ptodata/2/pubpaa/US60_PUBCOMB.pep:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Query Match	Length	DB	ID	Description
1	846	100.0	165	9	US-09-853-731-1	Sequence 1, Appli
2	846	100.0	165	10	US-09-945-517-1	Sequence 1, Appli
3	846	100.0	165	13	US-10-014-363-1	Sequence 1, Appli
4	846	100.0	165	14	US-10-241-356-1	Sequence 1, Appli
5	846	100.0	165	14	US-10-293-551-1	Sequence 1, Appli
6	846	100.0	165	15	US-10-411-037-73	Sequence 73, Appl
7	846	100.0	165	15	US-10-411-026-73	Sequence 73, Appl
8	846	100.0	165	15	US-10-410-962-73	Sequence 73, Appl
9	846	100.0	165	15	US-10-411-049-73	Sequence 73, Appl
10	846	100.0	165	16	US-10-634-477-1	Sequence 1, Appli
11	846	100.0	165	16	US-10-410-930-73	Sequence 73, Appl
12	846	100.0	165	16	US-10-410-997-73	Sequence 73, Appl
13	846	100.0	165	16	US-10-411-012-73	Sequence 73, Appl
14	846	100.0	165	16	US-10-410-913-73	Sequence 73, Appl
15	846	100.0	165	16	US-10-706-701-1	Sequence 1, Appli
16	846	100.0	165	17	US-10-410-980-73	Sequence 73, Appl
17	846	100.0	165	17	US-10-410-897-73	Sequence 73, Appl
18	846	100.0	165	18	US-10-780-297-1	Sequence 1, Appli
19	846	100.0	166	9	US-09-853-731-2	Sequence 2, Appli
20	846	100.0	166	13	US-10-014-363-2	Sequence 2, Appli
21	846	100.0	166	14	US-10-241-356-2	Sequence 2, Appli
22	846	100.0	166	14	US-10-293-551-2	Sequence 2, Appli
23	846	100.0	166	14	US-10-400-377-2	Sequence 2, Appli
24	846	100.0	166	14	US-10-400-708-2	Sequence 2, Appli
25	846	100.0	166	14	US-10-298-148-2	Sequence 2, Appli
26	846	100.0	166	15	US-10-360-101-227	Sequence 227, App
27	846	100.0	166	15	US-10-467-115-1	Sequence 1, Appli
28	846	100.0	166	16	US-10-658-834A-201	Sequence 201, App
29	846	100.0	166	16	US-10-773-939-2	Sequence 2, Appli
30	846	100.0	166	16	US-10-774-149-2	Sequence 2, Appli
31	846	100.0	166	16	US-10-468-496-133	Sequence 133, App
32	846	100.0	166	16	US-10-773-654-2	Sequence 2, Appli
33	846	100.0	166	16	US-10-866-540-2	Sequence 2, Appli
34	846	100.0	166	16	US-10-856-219-2	Sequence 2, Appli
35	846	100.0	166	17	US-10-685-288-2	Sequence 2, Appli
36	846	100.0	166	17	US-10-866-580-2	Sequence 2, Appli
37	846	100.0	166	17	US-10-773-530-2	Sequence 2, Appli
38	846	100.0	166	18	US-10-780-297-2	Sequence 2, Appli
39	846	100.0	169	13	US-10-014-363-4	Sequence 4, Appli
40	846	100.0	174	13	US-10-014-363-3	Sequence 3, Appli
41	846	100.0	174	13	US-10-014-363-5	Sequence 5, Appli
42	846	100.0	193	10	US-09-813-775C-4	Sequence 4, Appli
43	846	100.0	193	14	US-10-113-824-2	Sequence 2, Appli
44	846	100.0	193	16	US-10-612-665-10	Sequence 10, Appl
45	846	100.0	193	16	US-10-612-665-22	Sequence 22, Appl
46	846	100.0	193	16	US-10-612-665-112	Sequence 112, App
47	846	100.0	193	16	US-10-676-694-10	Sequence 10, Appl
48	846	100.0	193	16	US-10-676-694-22	Sequence 22, Appl
49	846	100.0	193	16	US-10-676-694-112	Sequence 112, App
50	846	100.0	193	18	US-10-759-031-10	Sequence 10, Appl
51	846	100.0	193	20	US-11-021-516-1	Sequence 1, Appli
52	846	100.0	193	20	US-11-021-516-14	Sequence 14, Appl
53	846	100.0	201	20	US-11-021-516-20	Sequence 20, Appl
54	846	100.0	209	14	US-10-230-454-4	Sequence 4, Appli
55	846	100.0	220	14	US-10-196-183-2	Sequence 2, Appli
56	846	100.0	370	14	US-10-230-454-3	Sequence 3, Appli
57	846	100.0	428	15	US-10-435-608-10	Sequence 10, Appl
58	846	100.0	428	15	US-10-622-108-10	Sequence 10, Appl
59	846	100.0	428	17	US-10-841-250-24	Sequence 24, Appl
60	846	100.0	435	10	US-09-932-812-22	Sequence 22, Appl
61	846	100.0	435	16	US-10-761-593A-22	Sequence 22, Appl
62	846	100.0	435	20	US-11-016-518A-22	Sequence 22, Appl
63	846	100.0	435	20	US-11-017-185-22	Sequence 22, Appl
64	846	100.0	436	10	US-09-932-812-18	Sequence 18, Appl
65	846	100.0	436	16	US-10-761-593A-18	Sequence 18, Appl
66	846	100.0	436	20	US-11-016-518A-18	Sequence 18, Appl
67	846	100.0	436	20	US-11-017-185-18	Sequence 18, Appl
68	846	100.0	437	10	US-09-932-812-20	Sequence 20, Appl
69	846	100.0	437	16	US-10-761-593A-20	Sequence 20, Appl
70	846	100.0	437	20	US-11-016-518A-20	Sequence 20, Appl
71	846	100.0	437	20	US-11-017-185-20	Sequence 20, Appl

ALIGNMENTS

RESULT 1
US-09-853-731-1
; Sequence 1, Application US/09853731
; Patent No. US20020037841A1
; GENERAL INFORMATION:
; APPLICANT: Papadimitriou, Apollon
; TITLE OF INVENTION: Erythropoietin Composition
; FILE REFERENCE: 20619 US

```
;  CURRENT APPLICATION NUMBER: US/09/853,731
;  CURRENT FILING DATE:  2001-05-11
;  PRIOR APPLICATION NUMBER: EP/00110355.5
;  PRIOR FILING DATE: 2000-05-15
;  NUMBER OF SEQ ID NOS: 2
;  SOFTWARE: PatentIn version 3.0
; SEQ ID NO 1
;   LENGTH: 165
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-09-853-731-1

  Query Match            100.0%;  Score 846;  DB 9;  Length 165;
  Best Local Similarity   100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 2
US-09-945-517-1
; Sequence 1, Application US/09945517
; Publication No. US20030104996A1
; GENERAL INFORMATION:
;  APPLICANT: Li, Tiansheng
;  APPLICANT:  Chang, Byeong
;  APPLICANT:  Sloey, Christopher
;  TITLE OF INVENTION: L-METHIONINE AS A STABILIZER FOR NESP/EPO IN HSA-FREE FORMULATION
;  FILE REFERENCE: A-803
;  CURRENT APPLICATION NUMBER: US/09/945,517
;  CURRENT FILING DATE:  2001-08-30
;  NUMBER OF SEQ ID NOS: 2
;  SOFTWARE: PatentIn version 3.0
; SEQ ID NO 1
;   LENGTH: 165
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-09-945-517-1

  Query Match            100.0%;  Score 846;  DB 10;  Length 165;
  Best Local Similarity   100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 3
US-10-014-363-1
; Sequence 1, Application US/10014363
; Publication No. US20020115833A1
; GENERAL INFORMATION:
;  APPLICANT: Burg, Josef
;  APPLICANT:  Engel, Alfred
;  APPLICANT:  Franze, Reinhard
;  APPLICANT:  Hilger, Bernd
;  APPLICANT:  Schurig, Hartmut Ernst
;  APPLICANT:  Tischer, Wilhelm
;  APPLICANT:  Wozny, Manfred
;  TITLE OF INVENTION: Erythropoietin Conjugates
;  FILE REFERENCE: Case 20805
;  CURRENT APPLICATION NUMBER: US/10/014,363
;  CURRENT FILING DATE:  2001-12-11
;  NUMBER OF SEQ ID NOS: 5
;  SOFTWARE: PatentIn version 3.1
; SEQ ID NO 1
;   LENGTH: 165
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-014-363-1

  Query Match            100.0%;  Score 846;  DB 13;  Length 165;
  Best Local Similarity   100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 4
US-10-241-356-1
; Sequence 1, Application US/10241356
; Publication No. US20030077753A1
; GENERAL INFORMATION:
;  APPLICANT: TISCHER, WILHELM
;  TITLE OF INVENTION: DIGLYCOSYLATED ERYTHROPOIETIN
;  FILE REFERENCE: 20971
;  CURRENT APPLICATION NUMBER: US/10/241,356
;  CURRENT FILING DATE:  2002-09-11
;  PRIOR APPLICATION NUMBER: EP 01122555.4
;  PRIOR FILING DATE: 2001-09-25
;  NUMBER OF SEQ ID NOS: 2
;  SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 1
;   LENGTH: 165
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-241-356-1

  Query Match            100.0%;  Score 846;  DB 14;  Length 165;
  Best Local Similarity   100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 5
US-10-293-551-1
```

```
; Sequence 1, Application US/10293551
; Publication No. US20030120045A1
; GENERAL INFORMATION:
;  APPLICANT: Bailon, Pascal
;  TITLE OF INVENTION: ERYTHROPOIETIN CONJUGATES
;  FILE REFERENCE: 1097 nonprovisional
;  CURRENT APPLICATION NUMBER: US/10/293,551
;  CURRENT FILING DATE:  2002-11-14
;  PRIOR APPLICATION NUMBER: US/09/604,938
;  PRIOR FILING DATE: 2000-06-27
;  PRIOR APPLICATION NUMBER: 60/166,151
;  PRIOR FILING DATE: 1999-11-17
;  PRIOR APPLICATION NUMBER: 60/151,548
;  PRIOR FILING DATE: 1999-08-13
;  PRIOR APPLICATION NUMBER: 60/150,225
;  PRIOR FILING DATE: 1999-08-23
;  PRIOR APPLICATION NUMBER: 60/142,254
;  PRIOR FILING DATE: 1999-07-02
;  NUMBER OF SEQ ID NOS: 3
;  SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 1
;   LENGTH: 165
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-293-551-1

  Query Match             100.0%;  Score 846;  DB 14;  Length 165;
  Best Local Similarity   100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 6
US-10-411-037-73
; Sequence 73, Application US/10411037
; Publication No. US20040043446A1
; GENERAL INFORMATION:
;  APPLICANT: Neose Technologies, Inc.
;  APPLICANT:  DeFrees, Shawn
;  APPLICANT:  Zopf, David
;  APPLICANT:  Bayer, Robert
;  APPLICANT:  Hakes, David
;  APPLICANT:  Chen, Xi
;  APPLICANT:  Bowe, Caryn
;  TITLE OF INVENTION: ALPHA GALACTOSIDASE A: REMODELING AND GLYCOCONJUGATION OF ALPHA
;  TITLE OF INVENTION:  GALACTOSIDASE A
;  FILE REFERENCE: 040853-01-5082
;  CURRENT APPLICATION NUMBER: US/10/411,037
;  CURRENT FILING DATE:  2003-04-09
;  PRIOR APPLICATION NUMBER: US 60/328,523
;  PRIOR FILING DATE: 2001-10-10
;  PRIOR APPLICATION NUMBER: US 60/344,692
;  PRIOR FILING DATE: 2001-10-19
;  PRIOR APPLICATION NUMBER: US 60/387,292
;  PRIOR FILING DATE: 2002-06-07
;  PRIOR APPLICATION NUMBER: US 60/391,777
;  PRIOR FILING DATE: 2002-06-25
;  PRIOR APPLICATION NUMBER: US 60/396,594
;  PRIOR FILING DATE: 2002-07-17
;  PRIOR APPLICATION NUMBER: US 60/404,249
;  PRIOR FILING DATE: 2002-08-16
;  PRIOR APPLICATION NUMBER: US 60/407,527
;  PRIOR FILING DATE: 2002-08-28
;  NUMBER OF SEQ ID NOS: 75
;  SOFTWARE: PatentIn version 3.2
; SEQ ID NO 73
;   LENGTH: 165
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-411-037-73

  Query Match             100.0%;  Score 846;  DB 15;  Length 165;
  Best Local Similarity   100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 7
US-10-411-026-73
; Sequence 73, Application US/10411026
; Publication No. US20040063911A1
; GENERAL INFORMATION:
;  APPLICANT: Neose Technologies, Inc.
;  APPLICANT:  DeFrees, Shawn
;  APPLICANT:  Zopf, David
;  APPLICANT:  Bayer, Robert
;  APPLICANT:  Hakes, David
;  APPLICANT:  Chen, Xi
;  TITLE OF INVENTION: PROTEIN REMODELING METHODS AND PROTEINS/PEPTIDES PRODUCED BY THE
;  TITLE OF INVENTION:  METHODS
;  FILE REFERENCE: 040853-01-5053
;  CURRENT APPLICATION NUMBER: US/10/411,026
;  CURRENT FILING DATE:  2003-04-09
;  PRIOR APPLICATION NUMBER: US 60/328,523
;  PRIOR FILING DATE: 2001-10-10
;  PRIOR APPLICATION NUMBER: US 60/344,692
;  PRIOR FILING DATE: 2001-10-19
;  PRIOR APPLICATION NUMBER: US 60/387,292
;  PRIOR FILING DATE: 2002-06-07
;  PRIOR APPLICATION NUMBER: US 60/391,777
;  PRIOR FILING DATE: 2002-06-25
;  PRIOR APPLICATION NUMBER: US 60/396,594
;  PRIOR FILING DATE: 2002-07-17
;  PRIOR APPLICATION NUMBER: US 60/404,249
;  PRIOR FILING DATE: 2002-08-16
;  PRIOR APPLICATION NUMBER: US 60/407,527
;  PRIOR FILING DATE: 2002-08-28
;  NUMBER OF SEQ ID NOS: 75
;  SOFTWARE: PatentIn version 3.2
; SEQ ID NO 73
;   LENGTH: 165
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-411-026-73

  Query Match             100.0%;  Score 846;  DB 15;  Length 165;
  Best Local Similarity   100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
```

```
                ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
                |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 8
US-10-410-962-73
; Sequence 73, Application US/10410962
; Publication No. US20040077836A1
; GENERAL INFORMATION:
;  APPLICANT: Neose Technologies, Inc.
;  APPLICANT:  DeFrees, Shawn
;  APPLICANT:  Zopf, David
;  APPLICANT:  Bayer, Robert
;  APPLICANT:  Hakes, David
;  APPLICANT:  Chen, Xi
;  APPLICANT:  Bowe, Caryn
;  TITLE OF INVENTION: GRANULOCYTE COLONY STIMULATING FACTOR: REMODELING AND
;  TITLE OF INVENTION:  GLYCOCONJUGATION OF G-CSF
;  FILE REFERENCE: 040853-01-5054
;  CURRENT APPLICATION NUMBER: US/10/410,962
;  CURRENT FILING DATE:  2003-04-09
;  PRIOR APPLICATION NUMBER: US 60/328,523
;  PRIOR FILING DATE: 2001-10-10
;  PRIOR APPLICATION NUMBER: US 60/344,692
;  PRIOR FILING DATE: 2001-10-19
;  PRIOR APPLICATION NUMBER: US 60/387,292
;  PRIOR FILING DATE: 2002-06-07
;  PRIOR APPLICATION NUMBER: US 60/391,777
;  PRIOR FILING DATE: 2002-06-25
;  PRIOR APPLICATION NUMBER: US 60/396,594
;  PRIOR FILING DATE: 2002-07-17
;  PRIOR APPLICATION NUMBER: US 60/404,249
;  PRIOR FILING DATE: 2002-08-16
;  PRIOR APPLICATION NUMBER: US 60/407,527
;  PRIOR FILING DATE: 2002-08-28
;  NUMBER OF SEQ ID NOS: 75
;  SOFTWARE: PatentIn version 3.2
; SEQ ID NO 73
;   LENGTH: 165
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-410-962-73

  Query Match             100.0%;  Score 846;  DB 15;  Length 165;
  Best Local Similarity   100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 9
US-10-411-049-73
; Sequence 73, Application US/10411049
; Publication No. US20040082026A1
; GENERAL INFORMATION:
;  APPLICANT: Neose Technologies, Inc.
;  APPLICANT:  DeFrees, Shawn
;  APPLICANT:  Zopf, David
;  APPLICANT:  Bayer, Robert
;  APPLICANT:  Hakes, David
;  APPLICANT:  Chen, Xi
;  APPLICANT:  Bowe, Caryn
;  TITLE OF INVENTION: INTERFERON ALPHA: REMODELING AND GLYCOCONJUGATION OF INTERFERON
;  TITLE OF INVENTION:  ALPHA
;  FILE REFERENCE: 040853-01-5055
;  CURRENT APPLICATION NUMBER: US/10/411,049
;  CURRENT FILING DATE:  2003-04-09
;  PRIOR APPLICATION NUMBER: US 60/328,523
;  PRIOR FILING DATE: 2001-10-10
;  PRIOR APPLICATION NUMBER: US 60/344,692
;  PRIOR FILING DATE: 2001-10-19
;  PRIOR APPLICATION NUMBER: US 60/387,292
;  PRIOR FILING DATE: 2002-06-07
;  PRIOR APPLICATION NUMBER: US 60/391,777
;  PRIOR FILING DATE: 2002-06-25
;  PRIOR APPLICATION NUMBER: US 60/396,594
;  PRIOR FILING DATE: 2002-07-17
;  PRIOR APPLICATION NUMBER: US 60/404,249
;  PRIOR FILING DATE: 2002-08-16
;  PRIOR APPLICATION NUMBER: US 60/407,527
;  PRIOR FILING DATE: 2002-08-28
;  NUMBER OF SEQ ID NOS: 75
;  SOFTWARE: PatentIn version 3.2
; SEQ ID NO 73
;   LENGTH: 165
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-411-049-73

  Query Match             100.0%;  Score 846;  DB 15;  Length 165;
  Best Local Similarity   100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 10
US-10-634-477-1
; Sequence 1, Application US/10634477
; Publication No. US20040110679A1
; GENERAL INFORMATION:
;  APPLICANT: Lehmann, Paul
;  APPLICANT:  Roeddiger, Ralf
;  APPLICANT:  Walter-Matsui, Ruth
;  TITLE OF INVENTION: TREATMENT OF DISTURBANCES OF IRON DISTRIBUTION
;  FILE REFERENCE: 21368
;  CURRENT APPLICATION NUMBER: US/10/634,477
;  CURRENT FILING DATE:  2003-08-04
;  PRIOR APPLICATION NUMBER: 02019100.3
;  PRIOR FILING DATE: 2002-08-29
;  NUMBER OF SEQ ID NOS: 1
;  SOFTWARE: PatentIn Ver. 3.1
; SEQ ID NO 1
;   LENGTH: 165
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-634-477-1

  Query Match             100.0%;  Score 846;  DB 16;  Length 165;
  Best Local Similarity   100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;
```

```
Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 11
US-10-410-930-73
; Sequence 73, Application US/10410930
; Publication No. US20040115168A1
; GENERAL INFORMATION:
;  APPLICANT: Neose Technologies, Inc.
;  APPLICANT:  DeFrees, Shawn
;  APPLICANT:  Zopf, David
;  APPLICANT:  Bayer, Robert
;  APPLICANT:  Hakes, David
;  APPLICANT:  Chen, Xi
;  APPLICANT:  Bowe, Caryn
;  TITLE OF INVENTION: INTERFERON BETA: REMODELING AND GLYCOCONJUGATION OF INTERFERON
;  TITLE OF INVENTION:  BETA
;  FILE REFERENCE: 040853-01-5056
;  CURRENT APPLICATION NUMBER: US/10/410,930
;  CURRENT FILING DATE:  2003-04-09
;  PRIOR APPLICATION NUMBER: US 60/328,523
;  PRIOR FILING DATE: 2001-10-10
;  PRIOR APPLICATION NUMBER: US 60/344,692
;  PRIOR FILING DATE: 2001-10-19
;  PRIOR APPLICATION NUMBER: US 60/387,292
;  PRIOR FILING DATE: 2002-06-07
;  PRIOR APPLICATION NUMBER: US 60/391,777
;  PRIOR FILING DATE: 2002-06-25
;  PRIOR APPLICATION NUMBER: US 60/396,594
;  PRIOR FILING DATE: 2002-07-17
;  PRIOR APPLICATION NUMBER: US 60/404,249
;  PRIOR FILING DATE: 2002-08-16
;  PRIOR APPLICATION NUMBER: US 60/407,527
;  PRIOR FILING DATE: 2002-08-28
;  NUMBER OF SEQ ID NOS: 75
;  SOFTWARE: PatentIn version 3.2
; SEQ ID NO 73
;   LENGTH: 165
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-410-930-73

  Query Match             100.0%;  Score 846;  DB 16;  Length 165;
  Best Local Similarity   100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 12
US-10-410-997-73
; Sequence 73, Application US/10410997
; Publication No. US20040126838A1
; GENERAL INFORMATION:
;  APPLICANT: Neose Technologies, Inc.
;  APPLICANT:  DeFrees, Shawn
;  APPLICANT:  Zopf, David
;  APPLICANT:  Bayer, Robert
;  APPLICANT:  Hakes, David
;  APPLICANT:  Chen, Xi
;  APPLICANT:  Bowe, Caryn
;  TITLE OF INVENTION: FOLLICLE STIMULATING HORMONE: REMODELING AND GLYCOCONJUGATION OF
;  TITLE OF INVENTION:  FSH
;  FILE REFERENCE: 040853-01-5059
;  CURRENT APPLICATION NUMBER: US/10/410,997
;  CURRENT FILING DATE:  2003-04-09
;  PRIOR APPLICATION NUMBER: US 60/328,523
;  PRIOR FILING DATE: 2001-10-10
;  PRIOR APPLICATION NUMBER: US 60/344,692
;  PRIOR FILING DATE: 2001-10-19
;  PRIOR APPLICATION NUMBER: US 60/387,292
;  PRIOR FILING DATE: 2002-06-07
;  PRIOR APPLICATION NUMBER: US 60/391,777
;  PRIOR FILING DATE: 2002-06-25
;  PRIOR APPLICATION NUMBER: US 60/396,594
;  PRIOR FILING DATE: 2002-07-17
;  PRIOR APPLICATION NUMBER: US 60/404,249
;  PRIOR FILING DATE: 2002-08-16
;  PRIOR APPLICATION NUMBER: US 60/407,527
;  PRIOR FILING DATE: 2002-08-28
;  NUMBER OF SEQ ID NOS: 75
;  SOFTWARE: PatentIn version 3.2
; SEQ ID NO 73
;   LENGTH: 165
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-410-997-73

  Query Match             100.0%;  Score 846;  DB 16;  Length 165;
  Best Local Similarity   100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 13
US-10-411-012-73
; Sequence 73, Application US/10411012
; Publication No. US20040132640A1
; GENERAL INFORMATION:
;  APPLICANT: Neose Technologies, Inc.
;  APPLICANT:  DeFrees, Shawn
;  APPLICANT:  Zopf, David
;  APPLICANT:  Bayer, Robert
;  APPLICANT:  Hakes, David
;  APPLICANT:  Chen, Xi
;  APPLICANT:  Bowe, Caryne
;  TITLE OF INVENTION: GLYCOPEGYLATION METHODS AND PROTEINS/PEPTIDES PRODUCED BY THE
;  TITLE OF INVENTION:  METHODS
;  FILE REFERENCE: 040853-01-5051
;  CURRENT APPLICATION NUMBER: US/10/411,012
;  CURRENT FILING DATE:  2003-04-09
;  PRIOR APPLICATION NUMBER: US 60/328,523
;  PRIOR FILING DATE: 2001-10-10
;  PRIOR APPLICATION NUMBER: US 60/344,692
;  PRIOR FILING DATE: 2001-10-19
```

```
;  PRIOR APPLICATION NUMBER: US 60/387,292
;  PRIOR FILING DATE: 2002-06-07
;  PRIOR APPLICATION NUMBER: US 60/391,777
;  PRIOR FILING DATE: 2002-06-25
;  PRIOR APPLICATION NUMBER: US 60/396,594
;  PRIOR FILING DATE: 2002-07-17
;  PRIOR APPLICATION NUMBER: US 60/404,249
;  PRIOR FILING DATE: 2002-08-16
;  PRIOR APPLICATION NUMBER: US 60/407,527
;  PRIOR FILING DATE: 2002-08-28
;  NUMBER OF SEQ ID NOS: 75
;  SOFTWARE: PatentIn version 3.2
; SEQ ID NO 73
;   LENGTH: 165
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-411-012-73

  Query Match             100.0%;  Score 846;  DB 16;  Length 165;
  Best Local Similarity   100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 14
US-10-410-913-73
; Sequence 73, Application US/10410913
; Publication No. US20040142856A1
; GENERAL INFORMATION:
;  APPLICANT: Neose Technologies, Inc.
;  APPLICANT:  DeFrees, Shawn
;  APPLICANT:  Zopf, David
;  APPLICANT:  Bayer, Robert
;  APPLICANT:  Hakes, David
;  APPLICANT:  Chen, Xi
;  APPLICANT:  Bowe, Caryn
;  TITLE OF INVENTION: GLYCOCONJUGATION METHODS AND PROTEINS/PEPTIDES PRODUCED BY THE
;  TITLE OF INVENTION:  METHODS
;  FILE REFERENCE: 040853-01-5081
;  CURRENT APPLICATION NUMBER: US/10/410,913
;  CURRENT FILING DATE:  2003-04-09
;  PRIOR APPLICATION NUMBER: US 60/328,523
;  PRIOR FILING DATE: 2001-10-10
;  PRIOR APPLICATION NUMBER: US 60/344,692
;  PRIOR FILING DATE: 2001-10-19
;  PRIOR APPLICATION NUMBER: US 60/387,292
;  PRIOR FILING DATE: 2002-06-07
;  PRIOR APPLICATION NUMBER: US 60/391,777
;  PRIOR FILING DATE: 2002-06-25
;  PRIOR APPLICATION NUMBER: US 60/396,594
;  PRIOR FILING DATE: 2002-07-17
;  PRIOR APPLICATION NUMBER: US 60/404,249
;  PRIOR FILING DATE: 2002-08-16
;  PRIOR APPLICATION NUMBER: US 60/407,527
;  PRIOR FILING DATE: 2002-08-28
;  NUMBER OF SEQ ID NOS: 75
;  SOFTWARE: PatentIn version 3.2
; SEQ ID NO 73
;   LENGTH: 165
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-410-913-73

  Query Match             100.0%;  Score 846;  DB 16;  Length 165;
  Best Local Similarity   100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 15
US-10-706-701-1
; Sequence 1, Application US/10706701
; Publication No. US20040209802A1
; GENERAL INFORMATION:
;  APPLICANT: Lehmann, Paul
;  APPLICANT:  Roeddiger, Ralf
;  APPLICANT:  Walter-Matsui, Ruth
;  TITLE OF INVENTION: TREATMENT OF DISTURBANCES OF IRON DISTRIBUTION
;  FILE REFERENCE: 21435
;  CURRENT APPLICATION NUMBER: US/10/706,701
;  CURRENT FILING DATE:  2003-11-12
;  PRIOR APPLICATION NUMBER: 02026342.2
;  PRIOR FILING DATE: 2002-11-22
;  NUMBER OF SEQ ID NOS: 1
;  SOFTWARE: PatentIn Ver. 2.0
; SEQ ID NO 1
;   LENGTH: 165
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-706-701-1

  Query Match             100.0%;  Score 846;  DB 16;  Length 165;
  Best Local Similarity   100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 16
US-10-410-980-73
; Sequence 73, Application US/10410980
; Publication No. US20050031584A1
; GENERAL INFORMATION:
;  APPLICANT: Neose Technologies, Inc.
;  APPLICANT:  DeFrees, Shawn
;  APPLICANT:  Zopf, David
;  APPLICANT:  Bayer, Robert
;  APPLICANT:  Hakes, David
;  APPLICANT:  Chen, Xi
;  APPLICANT:  Bowe, Caryn
;  TITLE OF INVENTION: INTERLEUKIN-2:  REMODELING AND GLYCOCONJUGATION OF IL-2
;  FILE REFERENCE: 040853-01-5066
;  CURRENT APPLICATION NUMBER: US/10/410,980
;  CURRENT FILING DATE:  2003-04-09
```

```
;  PRIOR APPLICATION NUMBER: US 60/328,523
;  PRIOR FILING DATE: 2001-10-10
;  PRIOR APPLICATION NUMBER: US 60/344,692
;  PRIOR FILING DATE: 2001-10-19
;  PRIOR APPLICATION NUMBER: US 60/387,292
;  PRIOR FILING DATE: 2002-06-07
;  PRIOR APPLICATION NUMBER: US 60/391,777
;  PRIOR FILING DATE: 2002-06-25
;  PRIOR APPLICATION NUMBER: US 60/396,594
;  PRIOR FILING DATE: 2002-07-17
;  PRIOR APPLICATION NUMBER: US 60/404,249
;  PRIOR FILING DATE: 2002-08-16
;  PRIOR APPLICATION NUMBER: US 60/407,527
;  PRIOR FILING DATE: 2002-08-28
;  NUMBER OF SEQ ID NOS: 75
;  SOFTWARE: PatentIn version 3.2
; SEQ ID NO 73
;   LENGTH: 165
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-410-980-73

  Query Match             100.0%;  Score 846;  DB 17;  Length 165;
  Best Local Similarity   100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 17
US-10-410-897-73
; Sequence 73, Application US/10410897
; Publication No. US20050100982A1
; GENERAL INFORMATION:
;  APPLICANT: Neose Technologies, Inc.
;  APPLICANT:  DeFrees, Shawn
;  APPLICANT:  Zopf, David
;  APPLICANT:  Bayer, Robert
;  APPLICANT:  Hakes, David
;  APPLICANT:  Chen, Xi
;  APPLICANT:  Bowe, Caryn
;  TITLE OF INVENTION: FACTOR IX; REMODELING AND GLYCOCONJUGATION OF FACTOR IX
;  FILE REFERENCE: 040853-01-5058
;  CURRENT APPLICATION NUMBER: US/10/410,897
;  CURRENT FILING DATE:  2003-04-09
;  PRIOR APPLICATION NUMBER: US 60/328,523
;  PRIOR FILING DATE: 2001-10-10
;  PRIOR APPLICATION NUMBER: US 60/344,692
;  PRIOR FILING DATE: 2001-10-19
;  PRIOR APPLICATION NUMBER: US 60/387,292
;  PRIOR FILING DATE: 2002-06-07
;  PRIOR APPLICATION NUMBER: US 60/391,777
;  PRIOR FILING DATE: 2002-06-25
;  PRIOR APPLICATION NUMBER: US 60/396,594
;  PRIOR FILING DATE: 2002-07-17
;  PRIOR APPLICATION NUMBER: US 60/404,249
;  PRIOR FILING DATE: 2002-08-16
;  PRIOR APPLICATION NUMBER: US 60/407,527
;  PRIOR FILING DATE: 2002-08-28
;  NUMBER OF SEQ ID NOS: 75
;  SOFTWARE: PatentIn version 3.2
; SEQ ID NO 73
;   LENGTH: 165
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-410-897-73

  Query Match             100.0%;  Score 846;  DB 17;  Length 165;
  Best Local Similarity   100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 18
US-10-780-297-1
; Sequence 1, Application US/10780297
; Publication No. US20040147431A1
; GENERAL INFORMATION:
;  APPLICANT: Papadimitriou, Apollon
;  TITLE OF INVENTION: Erythropoietin Composition
;  FILE REFERENCE: 20619 US
;  CURRENT APPLICATION NUMBER: US/10/780,297
;  CURRENT FILING DATE:  2004-02-17
;  PRIOR APPLICATION NUMBER: US/09/853,731
;  PRIOR FILING DATE: 2001-05-11
;  PRIOR APPLICATION NUMBER: EP/00110355.5
;  PRIOR FILING DATE: 2000-05-15
;  NUMBER OF SEQ ID NOS: 2
;  SOFTWARE: PatentIn version 3.0
; SEQ ID NO 1
;   LENGTH: 165
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-780-297-1

  Query Match             100.0%;  Score 846;  DB 18;  Length 165;
  Best Local Similarity   100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 19
US-09-853-731-2
; Sequence 2, Application US/09853731
; Patent No. US20020037841A1
; GENERAL INFORMATION:
;  APPLICANT: Papadimitriou, Apollon
;  TITLE OF INVENTION: Erythropoietin Composition
;  FILE REFERENCE: 20619 US
;  CURRENT APPLICATION NUMBER: US/09/853,731
;  CURRENT FILING DATE:  2001-05-11
;  PRIOR APPLICATION NUMBER: EP/00110355.5
;  PRIOR FILING DATE: 2000-05-15
;  NUMBER OF SEQ ID NOS: 2
```

```
;  SOFTWARE: PatentIn version 3.0
; SEQ ID NO 2
;   LENGTH: 166
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-09-853-731-2

  Query Match             100.0%;  Score 846;  DB 9;  Length 166;
  Best Local Similarity   100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 20
US-10-014-363-2
; Sequence 2, Application US/10014363
; Publication No. US20020115833A1
; GENERAL INFORMATION:
;  APPLICANT: Burg, Josef
;  APPLICANT:  Engel, Alfred
;  APPLICANT:  Franze, Reinhard
;  APPLICANT:  Hilger, Bernd
;  APPLICANT:  Schurig, Hartmut Ernst
;  APPLICANT:  Tischer, Wilhelm
;  APPLICANT:  Wozny, Manfred
;  TITLE OF INVENTION: Erythropoietin Conjugates
;  FILE REFERENCE: Case 20805
;  CURRENT APPLICATION NUMBER: US/10/014,363
;  CURRENT FILING DATE:  2001-12-11
;  NUMBER OF SEQ ID NOS: 5
;  SOFTWARE: PatentIn version 3.1
; SEQ ID NO 2
;   LENGTH: 166
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-014-363-2

  Query Match             100.0%;  Score 846;  DB 13;  Length 166;
  Best Local Similarity   100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 21
US-10-241-356-2
; Sequence 2, Application US/10241356
; Publication No. US20030077753A1
; GENERAL INFORMATION:
;  APPLICANT: TISCHER, WILHELM
;  TITLE OF INVENTION: DIGLYCOSYLATED ERYTHROPOIETIN
;  FILE REFERENCE: 20971
;  CURRENT APPLICATION NUMBER: US/10/241,356
;  CURRENT FILING DATE:  2002-09-11
;  PRIOR APPLICATION NUMBER: EP 01122555.4
;  PRIOR FILING DATE: 2001-09-25
;  NUMBER OF SEQ ID NOS: 2
;  SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 2
;   LENGTH: 166
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-241-356-2

  Query Match             100.0%;  Score 846;  DB 14;  Length 166;
  Best Local Similarity   100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 22
US-10-293-551-2
; Sequence 2, Application US/10293551
; Publication No. US20030120045A1
; GENERAL INFORMATION:
;  APPLICANT: Bailon, Pascal
;  TITLE OF INVENTION: ERYTHROPOIETIN CONJUGATES
;  FILE REFERENCE: 1097 nonprovisional
;  CURRENT APPLICATION NUMBER: US/10/293,551
;  CURRENT FILING DATE:  2002-11-14
;  PRIOR APPLICATION NUMBER: US/09/604,938
;  PRIOR FILING DATE: 2000-06-27
;  PRIOR APPLICATION NUMBER: 60/166,151
;  PRIOR FILING DATE: 1999-11-17
;  PRIOR APPLICATION NUMBER: 60/151,548
;  PRIOR FILING DATE: 1999-08-13
;  PRIOR APPLICATION NUMBER: 60/150,225
;  PRIOR FILING DATE: 1999-08-23
;  PRIOR APPLICATION NUMBER: 60/142,254
;  PRIOR FILING DATE: 1999-07-02
;  NUMBER OF SEQ ID NOS: 3
;  SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 2
;   LENGTH: 166
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-293-551-2

  Query Match             100.0%;  Score 846;  DB 14;  Length 166;
  Best Local Similarity   100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
```

```
RESULT 23
US-10-400-377-2
; Sequence 2, Application US/10400377
; Publication No. US20030162949A1
; GENERAL INFORMATION:
;  APPLICANT: Cox III, George N
;  APPLICANT:  Bolder Biotechnology, Inc.
;  TITLE OF INVENTION: Derivatives of Growth Hormone and Related Proteins
;  FILE REFERENCE: 4152-1-PUS
;  CURRENT APPLICATION NUMBER: US/10/400,377
;  CURRENT FILING DATE:  2003-03-26
;  PRIOR APPLICATION NUMBER: US/09/462,941
;  PRIOR FILING DATE: 2000-01-14
;  PRIOR APPLICATION NUMBER: 60/052,516
;  PRIOR FILING DATE: 1997-07-14
;  NUMBER OF SEQ ID NOS: 41
;  SOFTWARE: PatentIn Ver. 2.0
; SEQ ID NO 2
;   LENGTH: 166
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-400-377-2

  Query Match             100.0%;  Score 846;  DB 14;  Length 166;
  Best Local Similarity   100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 24
US-10-400-708-2
; Sequence 2, Application US/10400708
; Publication No. US20030166865A1
; GENERAL INFORMATION:
;  APPLICANT: Cox III, George N
;  APPLICANT:  Bolder Biotechnology, Inc.
;  TITLE OF INVENTION: Derivatives of Growth Hormone and Related Proteins
;  FILE REFERENCE: 4152-1-PUS
;  CURRENT APPLICATION NUMBER: US/10/400,708
;  CURRENT FILING DATE:  2003-03-26
;  PRIOR APPLICATION NUMBER: US/09/462,941
;  PRIOR FILING DATE: 2000-01-14
;  PRIOR APPLICATION NUMBER: 60/052,516
;  PRIOR FILING DATE: 1997-07-14
;  NUMBER OF SEQ ID NOS: 41
;  SOFTWARE: PatentIn Ver. 2.0
; SEQ ID NO 2
;   LENGTH: 166
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-400-708-2

  Query Match             100.0%;  Score 846;  DB 14;  Length 166;
  Best Local Similarity   100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 25
US-10-298-148-2
; Sequence 2, Application US/10298148
; Publication No. US20030171284A1
; GENERAL INFORMATION:
;  APPLICANT: Cox III, George N
;  APPLICANT:  Bolder Biotechnology, Inc.
;  TITLE OF INVENTION: Derivatives of Growth Hormone and Related Proteins
;  FILE REFERENCE: 4152-1-PUS
;  CURRENT APPLICATION NUMBER: US/10/298,148
;  CURRENT FILING DATE:  2002-11-15
;  PRIOR APPLICATION NUMBER: US/09/462,941
;  PRIOR FILING DATE: 2000-01-14
;  PRIOR APPLICATION NUMBER: 60/052,516
;  PRIOR FILING DATE: 1997-07-14
;  NUMBER OF SEQ ID NOS: 41
;  SOFTWARE: PatentIn Ver. 2.0
; SEQ ID NO 2
;   LENGTH: 166
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-298-148-2

  Query Match             100.0%;  Score 846;  DB 14;  Length 166;
  Best Local Similarity   100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 26
US-10-360-101-227
; Sequence 227, Application US/10360101
; Publication No. US20040009550A1
; GENERAL INFORMATION:
;  APPLICANT: Moll, Gert  N.
;  APPLICANT:  Leenhouts, Cornelis J.
;  TITLE OF INVENTION: Export and modification of (poly)peptide in the lantibiotic way
;  FILE REFERENCE: 2183-5673
;  CURRENT APPLICATION NUMBER: US/10/360,101
;  CURRENT FILING DATE:  2003-02-07
;  PRIOR APPLICATION NUMBER: EP 02077060.8
;  PRIOR FILING DATE: 2002-05-24
;  NUMBER OF SEQ ID NOS: 309
;  SOFTWARE: PatentIn version 3.1
; SEQ ID NO 227
;   LENGTH: 166
;   TYPE: PRT
;   ORGANISM: Artificial Sequence
;   FEATURE:
;   OTHER INFORMATION: sequence of erythropoietin
US-10-360-101-227

  Query Match             100.0%;  Score 846;  DB 15;  Length 166;
  Best Local Similarity   100.0%;  Pred. No. 1.4e-85;
```

```
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 27
US-10-467-115-1
; Sequence 1, Application US/10467115
; Publication No. US20040063917A1
; GENERAL INFORMATION:
;  APPLICANT: Carr,  Francis J.
;  APPLICANT:  Carter, Graham
;  APPLICANT:  Jones, Tim
;  APPLICANT:  Williams, Stephen
;  TITLE OF INVENTION: MODIFIED ERYTHROPOIETIN (EPO) WITH
;  TITLE OF INVENTION:  REDUCED IMMUNOGENICITY
;  FILE REFERENCE: MER-114
;  CURRENT APPLICATION NUMBER: US/10/467,115
;  CURRENT FILING DATE:  2003-08-05
;  PRIOR APPLICATION NUMBER: 01102615.0
;  PRIOR FILING DATE: 2001-02-06
;  PRIOR APPLICATION NUMBER: 01103954.2
;  PRIOR FILING DATE: 2001-02-19
;  PRIOR APPLICATION NUMBER: PCT/EP02/01174
;  PRIOR FILING DATE: 2002-02-05
;  NUMBER OF SEQ ID NOS: 72
;  SOFTWARE: FastSEQ for Windows Version 4.0
; SEQ ID NO 1
;   LENGTH: 166
;   TYPE: PRT
;   ORGANISM: Homo Sapien
US-10-467-115-1

  Query Match            100.0%;  Score 846;  DB 15;  Length 166;
  Best Local Similarity  100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 28
US-10-658-834A-201
; Sequence 201, Application US/10658834A
; Publication No. US20040132977A1
; GENERAL INFORMATION:
;  APPLICANT: Gantier, Rene
;  APPLICANT:  Guyon, Thierry
;  APPLICANT:  Drittanti, Lila
;  APPLICANT:  Vega, Manuel
;  TITLE OF INVENTION: Rational Evolution of Cytokines for Higher Stability, Encoding Nu
;  TITLE OF INVENTION:  Acid
;  TITLE OF INVENTION:  Molecules and Related Applications
;  FILE REFERENCE: 38751-922
;  CURRENT APPLICATION NUMBER: US/10/658,834A
;  CURRENT FILING DATE:  2003-09-08
;  PRIOR APPLICATION NUMBER: 60/457,135
;  PRIOR FILING DATE: 2003-03-21
;  PRIOR APPLICATION NUMBER: 60/409,898
;  PRIOR FILING DATE: 2002-09-09
;  NUMBER OF SEQ ID NOS: 1306
;  SOFTWARE: FastSEQ for Windows Version 4.0
; SEQ ID NO 201
;   LENGTH: 166
;   TYPE: PRT
;   ORGANISM: Homo sapiens
;  PUBLICATION INFORMATION:
;   DATABASE ACCESSION NUMBER: Genbank AAA52400
;   DATABASE ENTRY DATE: 1994-11-08
US-10-658-834A-201

  Query Match            100.0%;  Score 846;  DB 16;  Length 166;
  Best Local Similarity  100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 29
US-10-773-939-2
; Sequence 2, Application US/10773939
; Publication No. US20040175356A1
; GENERAL INFORMATION:
;  APPLICANT: Cox III, George N
;  APPLICANT:  Bolder Biotechnology, Inc.
;  TITLE OF INVENTION: Derivatives of Growth Hormone and Related Proteins
;  FILE REFERENCE: 4152-1-PUS
;  CURRENT APPLICATION NUMBER: US/10/773,939
;  CURRENT FILING DATE:  2004-02-05
;  PRIOR APPLICATION NUMBER: US/10/400,377
;  PRIOR FILING DATE: 2003-03-26
;  PRIOR APPLICATION NUMBER: US/09/462,941
;  PRIOR FILING DATE: 2000-01-14
;  PRIOR APPLICATION NUMBER: 60/052,516
;  PRIOR FILING DATE: 1997-07-14
;  NUMBER OF SEQ ID NOS: 41
;  SOFTWARE: PatentIn Ver. 2.0
; SEQ ID NO 2
;   LENGTH: 166
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-773-939-2

  Query Match            100.0%;  Score 846;  DB 16;  Length 166;
  Best Local Similarity  100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
```

```
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 30
US-10-774-149-2
; Sequence 2, Application US/10774149
; Publication No. US20040175800A1
; GENERAL INFORMATION:
;  APPLICANT: Cox III, George N
;  APPLICANT:  Bolder Biotechnology, Inc.
;  TITLE OF INVENTION: Derivatives of Growth Hormone and Related Proteins
;  FILE REFERENCE: 4152-1-PUS
;  CURRENT APPLICATION NUMBER: US/10/774,149
;  CURRENT FILING DATE:  2004-02-05
;  PRIOR APPLICATION NUMBER: US/10/400,377
;  PRIOR FILING DATE: 2003-03-26
;  PRIOR APPLICATION NUMBER: US/09/462,941
;  PRIOR FILING DATE: 2000-01-14
;  PRIOR APPLICATION NUMBER: 60/052,516
;  PRIOR FILING DATE: 1997-07-14
;  NUMBER OF SEQ ID NOS: 41
;  SOFTWARE: PatentIn Ver. 2.0
; SEQ ID NO 2
;   LENGTH: 166
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-774-149-2

  Query Match             100.0%;  Score 846;  DB 16;  Length 166;
  Best Local Similarity   100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 31
US-10-468-496-133
; Sequence 133, Application US/10468496
; Publication No. US20040180386A1
; GENERAL INFORMATION:
;  APPLICANT: Carr, Francis J.
;  APPLICANT:  Carter, Graham
;  APPLICANT:  Jones, Tim
;  APPLICANT:  Williams, Stephen
;  APPLICANT:  Hamilton, Anita
;  TITLE OF INVENTION: METHOD FOR IDENTIFICATION OF T-CELL
;  TITLE OF INVENTION:  EPITOPES AND USE FOR PREPARING MOLECULES WITH REDUCED
;  TITLE OF INVENTION:  IMMUNOGENCITY
;  FILE REFERENCE: MER-117
;  CURRENT APPLICATION NUMBER: US/10/468,496
;  CURRENT FILING DATE:  2003-09-25
;  PRIOR APPLICATION NUMBER: 01103954.2
;  PRIOR FILING DATE: 2001-02-19
;  PRIOR APPLICATION NUMBER: 01105777.5
;  PRIOR FILING DATE: 2001-03-08
;  PRIOR APPLICATION NUMBER: 01106538.0
;  PRIOR FILING DATE: 2001-03-15
;  PRIOR APPLICATION NUMBER: 01106536.4
;  PRIOR FILING DATE: 2001-03-15
;  PRIOR APPLICATION NUMBER: 01107012.5
;  PRIOR FILING DATE: 2001-03-20
;  PRIOR APPLICATION NUMBER: 01106899.6
;  PRIOR FILING DATE: 2001-03-20
;  NUMBER OF SEQ ID NOS: 2036
;  SOFTWARE: FastSEQ for Windows Version 4.0
; SEQ ID NO 133
;   LENGTH: 166
;   TYPE: PRT
;   ORGANISM: Homo Sapiens
US-10-468-496-133

  Query Match             100.0%;  Score 846;  DB 16;  Length 166;
  Best Local Similarity   100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 32
US-10-773-654-2
; Sequence 2, Application US/10773654
; Publication No. US20040214287A1
; GENERAL INFORMATION:
;  APPLICANT: Cox III, George N
;  APPLICANT:  Bolder Biotechnology, Inc.
;  TITLE OF INVENTION: Derivatives of Growth Hormone and Related Proteins
;  FILE REFERENCE: 4152-1-PUS
;  CURRENT APPLICATION NUMBER: US/10/773,654
;  CURRENT FILING DATE:  2004-02-05
;  PRIOR APPLICATION NUMBER: US/10/400,377
;  PRIOR FILING DATE: 2003-03-26
;  PRIOR APPLICATION NUMBER: US/09/462,941
;  PRIOR FILING DATE: 2000-01-14
;  PRIOR APPLICATION NUMBER: 60/052,516
;  PRIOR FILING DATE: 1997-07-14
;  NUMBER OF SEQ ID NOS: 41
;  SOFTWARE: PatentIn Ver. 2.0
; SEQ ID NO 2
;   LENGTH: 166
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-773-654-2

  Query Match             100.0%;  Score 846;  DB 16;  Length 166;
  Best Local Similarity   100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 33
US-10-866-540-2
; Sequence 2, Application US/10866540
; Publication No. US20040230040A1
; GENERAL INFORMATION:
;  APPLICANT: Cox III, George N
```

```
;  APPLICANT:  Bolder Biotechnology, Inc.
;  TITLE OF INVENTION: Derivatives of Growth Hormone and Related Proteins
;  FILE REFERENCE: 4152-1-PUS
;  CURRENT APPLICATION NUMBER: US/10/866,540
;  CURRENT FILING DATE:  2004-06-10
;  PRIOR APPLICATION NUMBER: US/10/400,377
;  PRIOR FILING DATE: 2003-03-26
;  PRIOR APPLICATION NUMBER: US/09/462,941
;  PRIOR FILING DATE: 2000-01-14
;  PRIOR APPLICATION NUMBER: 60/052,516
;  PRIOR FILING DATE: 1997-07-14
;  NUMBER OF SEQ ID NOS: 41
;  SOFTWARE: PatentIn Ver. 2.0
; SEQ ID NO 2
;   LENGTH: 166
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-866-540-2

  Query Match            100.0%;  Score 846;  DB 16;  Length 166;
  Best Local Similarity  100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 34
US-10-856-219-2
; Sequence 2, Application US/10856219
; Publication No. US20040265269A1
; GENERAL INFORMATION:
;  APPLICANT: Cox III, George N
;  APPLICANT:  Bolder Biotechnology, Inc.
;  TITLE OF INVENTION: Derivatives of Growth Hormone and Related Proteins
;  FILE REFERENCE: 4152-1-PUS
;  CURRENT APPLICATION NUMBER: US/10/856,219
;  CURRENT FILING DATE:  2004-05-27
;  PRIOR APPLICATION NUMBER: US/10/400,377
;  PRIOR FILING DATE: 2003-03-26
;  PRIOR APPLICATION NUMBER: US/09/462,941
;  PRIOR FILING DATE: 2000-01-14
;  PRIOR APPLICATION NUMBER: 60/052,516
;  PRIOR FILING DATE: 1997-07-14
;  NUMBER OF SEQ ID NOS: 41
;  SOFTWARE: PatentIn Ver. 2.0
; SEQ ID NO 2
;   LENGTH: 166
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-856-219-2

  Query Match            100.0%;  Score 846;  DB 16;  Length 166;
  Best Local Similarity  100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 35
US-10-685-288-2
; Sequence 2, Application US/10685288
; Publication No. US20050058621A1
; GENERAL INFORMATION:
;  APPLICANT: Cox III, George N
;  APPLICANT:  Bolder Biotechnology, Inc.
;  TITLE OF INVENTION: Derivatives of Growth Hormone and Related Proteins, and Methods of
;  TITLE OF INVENTION:  Thereof
;  FILE REFERENCE: 4152-1-PUS-8
;  CURRENT APPLICATION NUMBER: US/10/685,288
;  CURRENT FILING DATE:  2003-10-13
;  PRIOR APPLICATION NUMBER: 60/418,106
;  PRIOR FILING DATE: 2002-10-11
;  PRIOR APPLICATION NUMBER: 60/418,105
;  PRIOR FILING DATE: 2002-10-11
;  PRIOR APPLICATION NUMBER: 10/400,377
;  PRIOR FILING DATE: 2003-03-26
;  PRIOR APPLICATION NUMBER: 09/462,941
;  PRIOR FILING DATE: 2000-01-14
;  PRIOR APPLICATION NUMBER: PCT/US98/14497
;  PRIOR FILING DATE: 1998-07-13
;  PRIOR APPLICATION NUMBER: 60/052,516
;  PRIOR FILING DATE: 1997-07-14
;  PRIOR APPLICATION NUMBER: 10/298,148
;  PRIOR FILING DATE: 2002-11-15
;  PRIOR APPLICATION NUMBER: 60/418,040
;  PRIOR FILING DATE: 2002-10-11
;  PRIOR APPLICATION NUMBER: 60/332,285
;  PRIOR FILING DATE: 2001-11-15
;  PRIOR APPLICATION NUMBER: 09/889,273
;  PRIOR FILING DATE: 2001-07-13
;  Remaining Prior Application data removed - See File Wrapper or PALM.
;  NUMBER OF SEQ ID NOS: 41
;  SOFTWARE: PatentIn Ver. 2.0
; SEQ ID NO 2
;   LENGTH: 166
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-685-288-2

  Query Match            100.0%;  Score 846;  DB 17;  Length 166;
  Best Local Similarity  100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 36
US-10-866-580-2
; Sequence 2, Application US/10866580
; Publication No. US20050096461A1
; GENERAL INFORMATION:
;  APPLICANT: Cox III, George N
;  APPLICANT:  Bolder Biotechnology, Inc.
;  TITLE OF INVENTION: Derivatives of Growth Hormone and Related Proteins
;  FILE REFERENCE: 4152-1-PUS
;  CURRENT APPLICATION NUMBER: US/10/866,580
```

```
;  CURRENT FILING DATE:  2004-06-10
;  PRIOR APPLICATION NUMBER: US/10/400,377
;  PRIOR FILING DATE: 2003-03-26
;  PRIOR APPLICATION NUMBER: US/09/462,941
;  PRIOR FILING DATE: 2000-01-14
;  PRIOR APPLICATION NUMBER: 60/052,516
;  PRIOR FILING DATE: 1997-07-14
;  NUMBER OF SEQ ID NOS: 41
;  SOFTWARE: PatentIn Ver. 2.0
; SEQ ID NO 2
;   LENGTH: 166
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-866-580-2

  Query Match           100.0%;  Score 846;  DB 17;  Length 166;
  Best Local Similarity  100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 37
US-10-773-530-2
; Sequence 2, Application US/10773530
; Publication No. US20050107591A1
; GENERAL INFORMATION:
;  APPLICANT: Cox III, George N
;  APPLICANT:  Bolder Biotechnology, Inc.
;  TITLE OF INVENTION: Derivatives of Growth Hormone and Related Proteins
;  FILE REFERENCE: 4152-1-PUS
;  CURRENT APPLICATION NUMBER: US/10/773,530
;  CURRENT FILING DATE:  2004-02-05
;  PRIOR APPLICATION NUMBER: US/10/400,377
;  PRIOR FILING DATE: 2003-03-26
;  PRIOR APPLICATION NUMBER: US/09/462,941
;  PRIOR FILING DATE: 2000-01-14
;  PRIOR APPLICATION NUMBER: 60/052,516
;  PRIOR FILING DATE: 1997-07-14
;  NUMBER OF SEQ ID NOS: 41
;  SOFTWARE: PatentIn Ver. 2.0
; SEQ ID NO 2
;   LENGTH: 166
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-773-530-2

  Query Match           100.0%;  Score 846;  DB 17;  Length 166;
  Best Local Similarity  100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 38
US-10-780-297-2
; Sequence 2, Application US/10780297
; Publication No. US20040147431A1
; GENERAL INFORMATION:
;  APPLICANT: Papadimitriou, Apollon
;  TITLE OF INVENTION: Erythropoietin Composition
;  FILE REFERENCE: 20619 US
;  CURRENT APPLICATION NUMBER: US/10/780,297
;  CURRENT FILING DATE:  2004-02-17
;  PRIOR APPLICATION NUMBER: US/09/853,731
;  PRIOR FILING DATE: 2001-05-11
;  PRIOR APPLICATION NUMBER: EP/00110355.5
;  PRIOR FILING DATE: 2000-05-15
;  NUMBER OF SEQ ID NOS: 2
;  SOFTWARE: PatentIn version 3.0
; SEQ ID NO 2
;   LENGTH: 166
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-780-297-2

  Query Match           100.0%;  Score 846;  DB 18;  Length 166;
  Best Local Similarity  100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165


RESULT 39
US-10-014-363-4
; Sequence 4, Application US/10014363
; Publication No. US20020115833A1
; GENERAL INFORMATION:
;  APPLICANT: Burg, Josef
;  APPLICANT:  Engel, Alfred
;  APPLICANT:  Franze, Reinhard
;  APPLICANT:  Hilger, Bernd
;  APPLICANT:  Schurig, Hartmut Ernst
;  APPLICANT:  Tischer, Wilhelm
;  APPLICANT:  Wozny, Manfred
;  TITLE OF INVENTION: Erythropoietin Conjugates
;  FILE REFERENCE: Case 20805
;  CURRENT APPLICATION NUMBER: US/10/014,363
;  CURRENT FILING DATE:  2001-12-11
;  NUMBER OF SEQ ID NOS: 5
;  SOFTWARE: PatentIn version 3.1
; SEQ ID NO 4
;   LENGTH: 169
;   TYPE: PRT
;   ORGANISM: CHO/dhfr-
US-10-014-363-4

  Query Match           100.0%;  Score 846;  DB 13;  Length 169;
  Best Local Similarity  100.0%;  Pred. No. 1.4e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          4 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 63

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
```

```
                ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         64 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 123

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
                ||||||||||||||||||||||||||||||||||||||||||||||
Db        124 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 168


RESULT 40
US-10-014-363-3
; Sequence 3, Application US/10014363
; Publication No. US20020115833A1
; GENERAL INFORMATION:
;  APPLICANT: Burg, Josef
;  APPLICANT:  Engel, Alfred
;  APPLICANT:  Franze, Reinhard
;  APPLICANT:  Hilger, Bernd
;  APPLICANT:  Schurig, Hartmut Ernst
;  APPLICANT:  Tischer, Wilhelm
;  APPLICANT:  Wozny, Manfred
;  TITLE OF INVENTION: Erythropoietin Conjugates
;  FILE REFERENCE: Case 20805
;  CURRENT APPLICATION NUMBER: US/10/014,363
;  CURRENT FILING DATE:  2001-12-11
;  NUMBER OF SEQ ID NOS: 5
;  SOFTWARE: PatentIn version 3.1
; SEQ ID NO 3
;   LENGTH: 174
;   TYPE: PRT
;   ORGANISM: CHO/dhfr-
US-10-014-363-3

  Query Match            100.0%;  Score 846;  DB 13;  Length 174;
  Best Local Similarity   100.0%;  Pred. No. 1.5e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
                ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          9 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 68

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
                ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         69 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 128

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
                ||||||||||||||||||||||||||||||||||||||||||||||
Db        129 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 173


RESULT 41
US-10-014-363-5
; Sequence 5, Application US/10014363
; Publication No. US20020115833A1
; GENERAL INFORMATION:
;  APPLICANT: Burg, Josef
;  APPLICANT:  Engel, Alfred
;  APPLICANT:  Franze, Reinhard
;  APPLICANT:  Hilger, Bernd
;  APPLICANT:  Schurig, Hartmut Ernst
;  APPLICANT:  Tischer, Wilhelm
;  APPLICANT:  Wozny, Manfred
;  TITLE OF INVENTION: Erythropoietin Conjugates
;  FILE REFERENCE: Case 20805
;  CURRENT APPLICATION NUMBER: US/10/014,363
;  CURRENT FILING DATE:  2001-12-11
;  NUMBER OF SEQ ID NOS: 5
;  SOFTWARE: PatentIn version 3.1
; SEQ ID NO 5
;   LENGTH: 174
;   TYPE: PRT
;   ORGANISM: CHO/dhfr-
US-10-014-363-5

  Query Match            100.0%;  Score 846;  DB 13;  Length 174;
  Best Local Similarity   100.0%;  Pred. No. 1.5e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
                ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          9 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 68

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
                ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         69 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 128

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
                ||||||||||||||||||||||||||||||||||||||||||||||
Db        129 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 173


RESULT 42
US-09-813-775C-4
; Sequence 4, Application US/09813775C
; Publication No. US20030054494A1
; GENERAL INFORMATION:
;  APPLICANT: DeSauvage, Frederick
;  APPLICANT:  Henner, Dennis, J.
;  TITLE OF INVENTION: No. US20030054494A1el chimpanzee erythropoietin
;  TITLE OF INVENTION:  polypeptides and nucleic acids encoding the same
;  FILE REFERENCE: GENENT.057CP2
;  CURRENT APPLICATION NUMBER: US/09/813,775C
;  CURRENT FILING DATE:  1999-05-07
;  PRIOR APPLICATION NUMBER: US 09/307307
;  PRIOR FILING DATE: 1999-05-07
;  PRIOR APPLICATION NUMBER: US 09/552265
;  PRIOR FILING DATE: 2000-04-19
;  NUMBER OF SEQ ID NOS: 52
;  SOFTWARE: FastSEQ for Windows Version 4.0
; SEQ ID NO 4
;   LENGTH: 193
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-09-813-775C-4

  Query Match            100.0%;  Score 846;  DB 10;  Length 193;
  Best Local Similarity   100.0%;  Pred. No. 1.7e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
                ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
                ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
                ||||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 43
US-10-113-824-2
; Sequence 2, Application US/10113824
; Publication No. US20030050269A1
; GENERAL INFORMATION:
;  APPLICANT: Escary, Jean-Louis
;  TITLE OF INVENTION: NEW POLYNUCLEOTIDES AND POLYPEPTIDES OF THE ERYTHROPOIETIN GENE
;  FILE REFERENCE: 021349/0037
;  CURRENT APPLICATION NUMBER: US/10/113,824
;  CURRENT FILING DATE:  2002-03-29
;  PRIOR APPLICATION NUMBER: FR 0104603
;  PRIOR FILING DATE: 2001-04-04
;  PRIOR APPLICATION NUMBER: US 60/343163
;  PRIOR FILING DATE: 2001-12-21
;  PRIOR APPLICATION NUMBER: US 60/345,440
```

```
;  PRIOR FILING DATE: 2002-01-04
;  PRIOR APPLICATION NUMBER: US 60/358,598
;  PRIOR FILING DATE: 2002-02-21
;  NUMBER OF SEQ ID NOS: 22
;  SOFTWARE: PatentIn version 3.1
; SEQ ID NO 2
;   LENGTH: 193
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-113-824-2

  Query Match            100.0%;  Score 846;  DB 14;  Length 193;
  Best Local Similarity  100.0%;  Pred. No. 1.7e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 44
US-10-612-665-10
; Sequence 10, Application US/10612665
; Publication No. US20040122216A1
; GENERAL INFORMATION:
;  APPLICANT: Nielsen, J
;  APPLICANT:  Pedersen, J.
;  APPLICANT:  Gerwien, J.
;  APPLICANT:  Bay, K.
;  APPLICANT:  Pedersen, L.
;  APPLICANT:  Leist, M.
;  APPLICANT:  Geist, M.
;  APPLICANT:  Kallunki, P.
;  APPLICANT:  Christensen, S.
;  APPLICANT:  Sager, T.
;  APPLICANT:  Brines, M.
;  APPLICANT:  Cerami, A.
;  APPLICANT:  Cerami, C.
;  TITLE OF INVENTION: RECOMBINANT TISSUE PROTECTIVE CYTOKINES AND ENCODING NUCLEIC
;  TITLE OF INVENTION:  ACIDS THEREOF FOR PROTECTION, RESTORATION, AND ENHANCEMENT OF
;  TITLE OF INVENTION:  RESPONSIVE CELLS, TISSUES AND ORGANS
;  FILE REFERENCE: 10165-022-999
;  CURRENT APPLICATION NUMBER: US/10/612,665
;  CURRENT FILING DATE:  2003-07-01
;  PRIOR APPLICATION NUMBER: 60/392,455
;  PRIOR FILING DATE: 2002-07-01
;  PRIOR APPLICATION NUMBER: 60/393,423
;  PRIOR FILING DATE: 2002-07-03
;  NUMBER OF SEQ ID NOS: 212
;  SOFTWARE: PatentIn version 3.2
; SEQ ID NO 10
;   LENGTH: 193
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-612-665-10

  Query Match            100.0%;  Score 846;  DB 16;  Length 193;
  Best Local Similarity  100.0%;  Pred. No. 1.7e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 45
US-10-612-665-22
; Sequence 22, Application US/10612665
; Publication No. US20040122216A1
; GENERAL INFORMATION:
;  APPLICANT: Nielsen, J
;  APPLICANT:  Pedersen, J.
;  APPLICANT:  Gerwien, J.
;  APPLICANT:  Bay, K.
;  APPLICANT:  Pedersen, L.
;  APPLICANT:  Leist, M.
;  APPLICANT:  Geist, M.
;  APPLICANT:  Kallunki, P.
;  APPLICANT:  Christensen, S.
;  APPLICANT:  Sager, T.
;  APPLICANT:  Brines, M.
;  APPLICANT:  Cerami, A.
;  APPLICANT:  Cerami, C.
;  TITLE OF INVENTION: RECOMBINANT TISSUE PROTECTIVE CYTOKINES AND ENCODING NUCLEIC
;  TITLE OF INVENTION:  ACIDS THEREOF FOR PROTECTION, RESTORATION, AND ENHANCEMENT OF
;  TITLE OF INVENTION:  RESPONSIVE CELLS, TISSUES AND ORGANS
;  FILE REFERENCE: 10165-022-999
;  CURRENT APPLICATION NUMBER: US/10/612,665
;  CURRENT FILING DATE:  2003-07-01
;  PRIOR APPLICATION NUMBER: 60/392,455
;  PRIOR FILING DATE: 2002-07-01
;  PRIOR APPLICATION NUMBER: 60/393,423
;  PRIOR FILING DATE: 2002-07-03
;  NUMBER OF SEQ ID NOS: 212
;  SOFTWARE: PatentIn version 3.2
; SEQ ID NO 22
;   LENGTH: 193
;   TYPE: PRT
;   ORGANISM: Artificial
;   FEATURE:
;   OTHER INFORMATION: Description of Artificial Sequence: mutein
US-10-612-665-22

  Query Match            100.0%;  Score 846;  DB 16;  Length 193;
  Best Local Similarity  100.0%;  Pred. No. 1.7e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 46
US-10-612-665-112
; Sequence 112, Application US/10612665
; Publication No. US20040122216A1
; GENERAL INFORMATION:
;  APPLICANT: Nielsen, J
;  APPLICANT:  Pedersen, J.
;  APPLICANT:  Gerwien, J.
;  APPLICANT:  Bay, K.
;  APPLICANT:  Pedersen, L.
```

```
;  APPLICANT:  Leist, M.
;  APPLICANT:  Geist, M.
;  APPLICANT:  Kallunki, P.
;  APPLICANT:  Christensen, S.
;  APPLICANT:  Sager, T.
;  APPLICANT:  Brines, M.
;  APPLICANT:  Cerami, A.
;  APPLICANT:  Cerami, C.
;  TITLE OF INVENTION: RECOMBINANT TISSUE PROTECTIVE CYTOKINES AND ENCODING NUCLEIC
;  TITLE OF INVENTION:  ACIDS THEREOF FOR PROTECTION, RESTORATION, AND ENHANCEMENT OF
;  TITLE OF INVENTION:  RESPONSIVE CELLS, TISSUES AND ORGANS
;  FILE REFERENCE: 10165-022-999
;  CURRENT APPLICATION NUMBER: US/10/612,665
;  CURRENT FILING DATE:  2003-07-01
;  PRIOR APPLICATION NUMBER: 60/392,455
;  PRIOR FILING DATE: 2002-07-01
;  PRIOR APPLICATION NUMBER: 60/393,423
;  PRIOR FILING DATE: 2002-07-03
;  NUMBER OF SEQ ID NOS: 212
;  SOFTWARE: PatentIn version 3.2
; SEQ ID NO 112
;   LENGTH: 193
;   TYPE: PRT
;   ORGANISM: Artificial
;   FEATURE:
;   OTHER INFORMATION: Description of Artificial Sequence: mutein
US-10-612-665-112

  Query Match            100.0%;  Score 846;  DB 16;  Length 193;
  Best Local Similarity   100.0%;  Pred. No. 1.7e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 47
US-10-676-694-10
; Sequence 10, Application US/10676694
; Publication No. US20040214236A1
; GENERAL INFORMATION:
;  APPLICANT: Nielsen, M.
;  APPLICANT:  Gerwien, J.
;  APPLICANT:  Pedersen, L.
;  APPLICANT:  Leist, M.
;  APPLICANT:  Sager, T.
;  APPLICANT:  Brines, M.
;  APPLICANT:  Cerami, A.
;  APPLICANT:  Ghezzi, P.
;  APPLICANT:  Fiordaliso, F.
;  APPLICANT:  Fratelli, M.
;  APPLICANT:  Gido, G.
;  TITLE OF INVENTION: TISSUE PROTECTIVE CYTOKINE RECEPTOR COMPLEX AND ASSAYS FOR IDENTI
;  TITLE OF INVENTION:  TISSUE PROTECTIVE COMPOUNDS
;  FILE REFERENCE: 10165-027-999
;  CURRENT APPLICATION NUMBER: US/10/676,694
;  CURRENT FILING DATE:  2003-09-30
;  PRIOR APPLICATION NUMBER: 60/465,891
;  PRIOR FILING DATE: 2003-04-25
;  NUMBER OF SEQ ID NOS: 212
;  SOFTWARE: PatentIn version 3.2
; SEQ ID NO 10
;   LENGTH: 193
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-676-694-10

  Query Match            100.0%;  Score 846;  DB 16;  Length 193;
  Best Local Similarity   100.0%;  Pred. No. 1.7e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 48
US-10-676-694-22
; Sequence 22, Application US/10676694
; Publication No. US20040214236A1
; GENERAL INFORMATION:
;  APPLICANT: Nielsen, M.
;  APPLICANT:  Gerwien, J.
;  APPLICANT:  Pedersen, L.
;  APPLICANT:  Leist, M.
;  APPLICANT:  Sager, T.
;  APPLICANT:  Brines, M.
;  APPLICANT:  Cerami, A.
;  APPLICANT:  Ghezzi, P.
;  APPLICANT:  Fiordaliso, F.
;  APPLICANT:  Fratelli, M.
;  APPLICANT:  Gido, G.
;  TITLE OF INVENTION: TISSUE PROTECTIVE CYTOKINE RECEPTOR COMPLEX AND ASSAYS FOR IDENTI
;  TITLE OF INVENTION:  TISSUE PROTECTIVE COMPOUNDS
;  FILE REFERENCE: 10165-027-999
;  CURRENT APPLICATION NUMBER: US/10/676,694
;  CURRENT FILING DATE:  2003-09-30
;  PRIOR APPLICATION NUMBER: 60/465,891
;  PRIOR FILING DATE: 2003-04-25
;  NUMBER OF SEQ ID NOS: 212
;  SOFTWARE: PatentIn version 3.2
; SEQ ID NO 22
;   LENGTH: 193
;   TYPE: PRT
;   ORGANISM: Artificial
;   FEATURE:
;   OTHER INFORMATION: Description of Artificial Sequence: mutein
US-10-676-694-22

  Query Match            100.0%;  Score 846;  DB 16;  Length 193;
  Best Local Similarity   100.0%;  Pred. No. 1.7e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 49
US-10-676-694-112
; Sequence 112, Application US/10676694
```

```
; Publication No. US20040214236A1
; GENERAL INFORMATION:
;  APPLICANT: Nielsen, M.
;  APPLICANT:  Gerwien, J.
;  APPLICANT:  Pedersen, L.
;  APPLICANT:  Leist, M.
;  APPLICANT:  Sager, T.
;  APPLICANT:  Brines, M.
;  APPLICANT:  Cerami, A.
;  APPLICANT:  Ghezzi, P.
;  APPLICANT:  Fiordaliso, F.
;  APPLICANT:  Fratelli, M.
;  APPLICANT:  Gido, G.
;  TITLE OF INVENTION: TISSUE PROTECTIVE CYTOKINE RECEPTOR COMPLEX AND ASSAYS FOR IDENTI
;  TITLE OF INVENTION:  TISSUE PROTECTIVE COMPOUNDS
;  FILE REFERENCE: 10165-027-999
;  CURRENT APPLICATION NUMBER: US/10/676,694
;  CURRENT FILING DATE:  2003-09-30
;  PRIOR APPLICATION NUMBER: 60/465,891
;  PRIOR FILING DATE: 2003-04-25
;  NUMBER OF SEQ ID NOS: 212
;  SOFTWARE: PatentIn version 3.2
; SEQ ID NO 112
;   LENGTH: 193
;   TYPE: PRT
;   ORGANISM: Artificial
;   FEATURE:
;   OTHER INFORMATION: Description of Artificial Sequence: mutein
US-10-676-694-112

  Query Match            100.0%;  Score 846;  DB 16;  Length 193;
  Best Local Similarity   100.0%;  Pred. No. 1.7e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 50
US-10-759-031-10
; Sequence 10, Application US/10759031
; Publication No. US20050158822A1
; GENERAL INFORMATION:
;  APPLICANT: Pecker, Iris
;  TITLE OF INVENTION: HIGH LEVEL EXPRESSION OF RECOMBINANT HUMAN ERYTHROPOIETIN
;  TITLE OF INVENTION:  HAVING
;  TITLE OF INVENTION:  A MODIFIED 5'-UTR
;  FILE REFERENCE: 27179
;  CURRENT APPLICATION NUMBER: US/10/759,031
;  CURRENT FILING DATE:  2004-01-20
;  NUMBER OF SEQ ID NOS: 13
;  SOFTWARE: PatentIn version 3.2
; SEQ ID NO 10
;   LENGTH: 193
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-759-031-10

  Query Match            100.0%;  Score 846;  DB 18;  Length 193;
  Best Local Similarity   100.0%;  Pred. No. 1.7e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 51
US-11-021-516-1
; Sequence 1, Application US/11021516
; Publication No. US20050170457A1
; GENERAL INFORMATION:
;  APPLICANT: Centocor, Inc.
;  APPLICANT:  Cunningham, Mark
;  APPLICANT:  Mills, Juliane
;  APPLICANT:  Pool, Chadler
;  TITLE OF INVENTION: NOVEL RECOMBINANT PROTEINS WITH N-TERMINAL FREE THIOL
;  FILE REFERENCE: CEN 5046
;  CURRENT APPLICATION NUMBER: US/11/021,516
;  CURRENT FILING DATE:  2004-12-23
;  PRIOR APPLICATION NUMBER: 60/533617
;  PRIOR FILING DATE: 2003-12-31
;  NUMBER OF SEQ ID NOS: 20
;  SOFTWARE: PatentIn version 3.3
; SEQ ID NO 1
;   LENGTH: 193
;   TYPE: PRT
;   ORGANISM: Homo sapiens
;   FEATURE:
;   NAME/KEY: SIGNAL
;   LOCATION: (1)..(27)
;   FEATURE:
;   NAME/KEY: mat_peptide
;   LOCATION: (28)..(193)
;   FEATURE:
;   NAME/KEY: VARIANT
;   LOCATION: (193)..(193)
;   OTHER INFORMATION: TRUNCATION, desArg
US-11-021-516-1

  Query Match            100.0%;  Score 846;  DB 20;  Length 193;
  Best Local Similarity   100.0%;  Pred. No. 1.7e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 52
US-11-021-516-14
; Sequence 14, Application US/11021516
; Publication No. US20050170457A1
; GENERAL INFORMATION:
;  APPLICANT: Centocor, Inc.
;  APPLICANT:  Cunningham, Mark
;  APPLICANT:  Mills, Juliane
;  APPLICANT:  Pool, Chadler
;  TITLE OF INVENTION: NOVEL RECOMBINANT PROTEINS WITH N-TERMINAL FREE THIOL
;  FILE REFERENCE: CEN 5046
;  CURRENT APPLICATION NUMBER: US/11/021,516
```

```
;  CURRENT FILING DATE:  2004-12-23
;  PRIOR APPLICATION NUMBER: 60/533617
;  PRIOR FILING DATE: 2003-12-31
;  NUMBER OF SEQ ID NOS: 20
;  SOFTWARE: PatentIn version 3.3
; SEQ ID NO 14
;   LENGTH: 193
;   TYPE: PRT
;   ORGANISM: Homo sapiens
;   FEATURE:
;   NAME/KEY: VARIANT
;   LOCATION: (22)..(22)
;   OTHER INFORMATION: Q22R
US-11-021-516-14

  Query Match            100.0%;  Score 846;  DB 20;  Length 193;
  Best Local Similarity   100.0%;  Pred. No. 1.7e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 53
US-11-021-516-20
; Sequence 20, Application US/11021516
; Publication No. US20050170457A1
; GENERAL INFORMATION:
;  APPLICANT: Centocor, Inc.
;  APPLICANT:  Cunningham, Mark
;  APPLICANT:  Mills, Juliane
;  APPLICANT:  Pool, Chadler
;  TITLE OF INVENTION: NOVEL RECOMBINANT PROTEINS WITH N-TERMINAL FREE THIOL
;  FILE REFERENCE: CEN 5046
;  CURRENT APPLICATION NUMBER: US/11/021,516
;  CURRENT FILING DATE:  2004-12-23
;  PRIOR APPLICATION NUMBER: 60/533617
;  PRIOR FILING DATE: 2003-12-31
;  NUMBER OF SEQ ID NOS: 20
;  SOFTWARE: PatentIn version 3.3
; SEQ ID NO 20
;   LENGTH: 201
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-11-021-516-20

  Query Match            100.0%;  Score 846;  DB 20;  Length 201;
  Best Local Similarity   100.0%;  Pred. No. 1.8e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 54
US-10-230-454-4
; Sequence 4, Application US/10230454
; Publication No. US20030124115A1
; GENERAL INFORMATION:
;  APPLICANT: DONG-EOK, LEE
;  APPLICANT:  MYUNG-SUK, OH
;  APPLICANT:  BO-SUP, CHUNG
;  APPLICANT:  JI-SOOK, PARK
;  APPLICANT:  KI-WAN, KIM
;  TITLE OF INVENTION: FUSION PROTEIN HAVING ENHANCED IN VIVO ACTIVITY OF
;  TITLE OF INVENTION:  ERYTHROPOIETIN
;  FILE REFERENCE: 58105 (71970)
;  CURRENT APPLICATION NUMBER: US/10/230,454
;  CURRENT FILING DATE:  2002-08-29
;  PRIOR APPLICATION NUMBER: 2001-74975
;  PRIOR FILING DATE: 2001-11-29
;  NUMBER OF SEQ ID NOS: 18
;  SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 4
;   LENGTH: 209
;   TYPE: PRT
;   ORGANISM: Artificial Sequence
;   FEATURE:
;   OTHER INFORMATION: Description of Artificial Sequence: Fusion protein
;   OTHER INFORMATION: (ESTP) of erythropoietin (EPO) and carboxy terminal
;   OTHER INFORMATION: peptide (STP) of human thrombopoietin
US-10-230-454-4

  Query Match            100.0%;  Score 846;  DB 14;  Length 209;
  Best Local Similarity   100.0%;  Pred. No. 1.9e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 55
US-10-196-183-2
; Sequence 2, Application US/10196183
; Publication No. US20030113871A1
; GENERAL INFORMATION:
;  APPLICANT: Lee, Dong-eok
;  APPLICANT:  Park, Ji-sook
;  APPLICANT:  Chung, Bo-sup
;  APPLICANT:  Kim, Ki-wan
;  APPLICANT:  Oh, Myung-suk
;  TITLE OF INVENTION: Fusion  protein having an enhanced in vivo erythropoietin activity
;  FILE REFERENCE: 401729/YPLEE
;  CURRENT APPLICATION NUMBER: US/10/196,183
;  CURRENT FILING DATE:  2002-07-17
;  PRIOR APPLICATION NUMBER: KR 10-2001-75994
;  PRIOR FILING DATE: 2001-12-03
;  NUMBER OF SEQ ID NOS: 10
;  SOFTWARE: PatentIn version 3.1
; SEQ ID NO 2
;   LENGTH: 220
;   TYPE: PRT
;   ORGANISM: Artificial Sequence
;   FEATURE:
;   OTHER INFORMATION: Fusion prfotein (EATP) of erythropoietin (EPO) and a variant of c
;   OTHER INFORMATION: arboxy terminal peptide (ATP) of human chorionic gonadotropin (HC
;   OTHER INFORMATION: G) beta subunit
US-10-196-183-2
```

```
  Query Match           100.0%;  Score 846;  DB 14;  Length 220;
  Best Local Similarity  100.0%;  Pred. No. 2.1e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 56
US-10-230-454-3
; Sequence 3, Application US/10230454
; Publication No. US20030124115A1
; GENERAL INFORMATION:
;  APPLICANT: DONG-EOK, LEE
;  APPLICANT:  MYUNG-SUK, OH
;  APPLICANT:  BO-SUP, CHUNG
;  APPLICANT:  JI-SOOK, PARK
;  APPLICANT:  KI-WAN, KIM
;  TITLE OF INVENTION: FUSION PROTEIN HAVING ENHANCED IN VIVO ACTIVITY OF
;  TITLE OF INVENTION:  ERYTHROPOIETIN
;  FILE REFERENCE: 58105 (71970)
;  CURRENT APPLICATION NUMBER: US/10/230,454
;  CURRENT FILING DATE:  2002-08-29
;  PRIOR APPLICATION NUMBER: 2001-74975
;  PRIOR FILING DATE: 2001-11-29
;  NUMBER OF SEQ ID NOS: 18
;  SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 3
;   LENGTH: 370
;   TYPE: PRT
;   ORGANISM: Artificial Sequence
;   FEATURE:
;   OTHER INFORMATION: Description of Artificial Sequence: Fusion protein
;   OTHER INFORMATION: (ELTP) of erythropoietin (EPO) and carboxy terminal
;   OTHER INFORMATION: peptide (LTP) of human thrombopoietin
US-10-230-454-3

  Query Match           100.0%;  Score 846;  DB 14;  Length 370;
  Best Local Similarity  100.0%;  Pred. No. 4.2e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 57
US-10-435-608-10
; Sequence 10, Application US/10435608
; Publication No. US20030235536A1
; GENERAL INFORMATION:
;  APPLICANT: Blumberg, Richard S.
;  APPLICANT:  Lencer, Wayne I.
;  APPLICANT:  Simister, Neil E.
;  APPLICANT:  Bitonti, Alan J.
;  TITLE OF INVENTION: CENTRAL AIRWAY ADMINISTRATION FOR SYSTEMIC DELIVERY OF THERAPEUTI
;  FILE REFERENCE: S01383.70010.US
;  CURRENT APPLICATION NUMBER: US/10/435,608
;  CURRENT FILING DATE:  2003-05-09
;  PRIOR APPLICATION NUMBER: PCT/US02/21335
;  PRIOR FILING DATE: 2002-07-03
;  NUMBER OF SEQ ID NOS: 27
;  SOFTWARE: PatentIn version 3.1
; SEQ ID NO 10
;   LENGTH: 428
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-435-608-10

  Query Match           100.0%;  Score 846;  DB 15;  Length 428;
  Best Local Similarity  100.0%;  Pred. No. 5.2e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 58
US-10-622-108-10
; Sequence 10, Application US/10622108
; Publication No. US20040063912A1
; GENERAL INFORMATION:
;  APPLICANT: Blumberg, Richard S.
;  APPLICANT:  Lencer, Wayne I.
;  APPLICANT:  Simister, Neil E.
;  APPLICANT:  Bitonti, Alan J.
;  TITLE OF INVENTION: CENTRAL AIRWAY ADMINISTRATION FOR SYSTEMIC DELIVERY OF THERAPEUTI
;  FILE REFERENCE: S01383.70011.US
;  CURRENT APPLICATION NUMBER: US/10/622,108
;  CURRENT FILING DATE:  2003-07-17
;  PRIOR APPLICATION NUMBER: US 10/435,608
;  PRIOR FILING DATE: 2003-05-09
;  PRIOR APPLICATION NUMBER: PCT/US02/21355
;  PRIOR FILING DATE: 2002-07-03
;  PRIOR APPLICATION NUMBER: US 60/364,482
;  PRIOR FILING DATE: 2002-03-15
;  NUMBER OF SEQ ID NOS: 40
;  SOFTWARE: PatentIn version 3.1
; SEQ ID NO 10
;   LENGTH: 428
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-622-108-10

  Query Match           100.0%;  Score 846;  DB 15;  Length 428;
  Best Local Similarity  100.0%;  Pred. No. 5.2e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192
```

```
RESULT 59
US-10-841-250-24
; Sequence 24, Application US/10841250
; Publication No. US20050032174A1
; GENERAL INFORMATION:
;  APPLICANT: Peters, Robert T
;  APPLICANT:  Mezo, Adam R
;  APPLICANT:  Rivera, Daniel S
;  APPLICANT:  Bitonti, Alan  J
;  APPLICANT:  Low, Susan  C
;  APPLICANT:  Stattel, James M
;  TITLE OF INVENTION: IMMUNOGLOBULIN CHIMERIC MONOMER-DIMER HYBRIDS
;  FILE REFERENCE: 08945.0007-00000
;  CURRENT APPLICATION NUMBER: US/10/841,250
;  CURRENT FILING DATE:  2004-05-07
;  PRIOR APPLICATION NUMBER: 60/469,600
;  PRIOR FILING DATE: 2003-05-06
;  PRIOR APPLICATION NUMBER: 60/487,964
;  PRIOR FILING DATE: 2003-07-17
;  PRIOR APPLICATION NUMBER: 60/539,207
;  PRIOR FILING DATE: 2004-01-26
;  NUMBER OF SEQ ID NOS: 103
;  SOFTWARE: PatentIn version 3.1
; SEQ ID NO 24
;   LENGTH: 428
;   TYPE: PRT
;   ORGANISM: Artificial
;   FEATURE:
;   OTHER INFORMATION: Engineered Chimeric Sequence
US-10-841-250-24

  Query Match           100.0%;  Score 846;  DB 17;  Length 428;
  Best Local Similarity   100.0%;  Pred. No. 5.2e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 60
US-09-932-812-22
; Sequence 22, Application US/09932812
; Publication No. US20030082749A1
; GENERAL INFORMATION:
;  APPLICANT: Sun, Lee-Hwei K
;  APPLICANT: Sun, Bill N
;  APPLICANT: Sun, Cecily R
;  TITLE OF INVENTION: Fc fusion proteins of human erythropoietin with increased biologi
;  FILE REFERENCE: 02SUN2001
;  CURRENT APPLICATION NUMBER: US/09/932,812
;  CURRENT FILING DATE: 2001-10-30
;  NUMBER OF SEQ ID NOS: 22
;  SOFTWARE: PatentIn version 3.1
; SEQ ID NO 22
;   LENGTH: 435
;   TYPE: PRT
;   ORGANISM: Artificial Sequence
;   FEATURE:
;   OTHER INFORMATION: HuEPO-L-vFc gamma1 with a 27-amino acid leader peptide (Figure 2C
US-09-932-812-22

  Query Match           100.0%;  Score 846;  DB 10;  Length 435;
  Best Local Similarity   100.0%;  Pred. No. 5.3e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 61
US-10-761-593A-22
; Sequence 22, Application US/10761593A
; Publication No. US20040175824A1
; GENERAL INFORMATION:
;  APPLICANT: Sun, Lee-Hwei K
;  APPLICANT:  Sun, Bill N
;  APPLICANT:  Sun, Cecily R
;  TITLE OF INVENTION: Fc fusion proteins of human erythropoietin with high biological
;  TITLE OF INVENTION:  activities
;  FILE REFERENCE: 02SUN2001-A
;  CURRENT APPLICATION NUMBER: US/10/761,593A
;  CURRENT FILING DATE:  2004-01-21
;  PRIOR APPLICATION NUMBER: 09/932812
;  PRIOR FILING DATE: 2001-08-17
;  NUMBER OF SEQ ID NOS: 28
;  SOFTWARE: PatentIn version 3.2
; SEQ ID NO 22
;   LENGTH: 435
;   TYPE: PRT
;   ORGANISM: Artificial Sequence
;   FEATURE:
;   OTHER INFORMATION: HuEPO-L-vFc gamma1 with a 27-amino acid leader peptide (Figure
;   OTHER INFORMATION: 2C)
US-10-761-593A-22

  Query Match           100.0%;  Score 846;  DB 16;  Length 435;
  Best Local Similarity   100.0%;  Pred. No. 5.3e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 62
US-11-016-518A-22
; Sequence 22, Application US/11016518A
; Publication No. US20050124045A1
; GENERAL INFORMATION:
;  APPLICANT: Sun, Lee-Hwei K
;  APPLICANT:  Sun, Bill N
;  APPLICANT:  Sun, Cecily R
;  TITLE OF INVENTION: Fc fusion proteins of human erythropoietin with increased
;  TITLE OF INVENTION:  biological activities
;  FILE REFERENCE: 02SUN2004D1
;  CURRENT APPLICATION NUMBER: US/11/016,518A
;  CURRENT FILING DATE:  2004-12-17
;  PRIOR APPLICATION NUMBER: US 09/932,812
;  PRIOR FILING DATE: 2001-08-17
```

```
;  NUMBER OF SEQ ID NOS: 28
;  SOFTWARE: PatentIn version 3.2
; SEQ ID NO 22
;   LENGTH: 435
;   TYPE: PRT
;   ORGANISM: Artificial Sequence
;   FEATURE:
;   OTHER INFORMATION: HuEPO-L-vFc gamma1 with a 27-amino acid leader peptide (Figure
;   OTHER INFORMATION: 2C)
US-11-016-518A-22

  Query Match            100.0%;  Score 846;  DB 20;  Length 435;
  Best Local Similarity   100.0%;  Pred. No. 5.3e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 63
US-11-017-185-22
; Sequence 22, Application US/11017185
; Publication No. US20050142642A1
; GENERAL INFORMATION:
;  APPLICANT: Sun, Lee-Hwei K
;  APPLICANT:  Sun, Bill N
;  APPLICANT:  Sun, Cecily R
;  TITLE OF INVENTION: Fc fusion proteins of human erythropoietin with increased biologi
;  TITLE OF INVENTION:  activities
;  FILE REFERENCE: 02SUN2001D2
;  CURRENT APPLICATION NUMBER: US/11/017,185
;  CURRENT FILING DATE:  2004-12-17
;  PRIOR APPLICATION NUMBER: US 09/932,812
;  PRIOR FILING DATE: 2001-08-17
;  NUMBER OF SEQ ID NOS: 28
;  SOFTWARE: PatentIn version 3.1
; SEQ ID NO 22
;   LENGTH: 435
;   TYPE: PRT
;   ORGANISM: Artificial Sequence
;   FEATURE:
;   OTHER INFORMATION: HuEPO-L-vFc gamma1 with a 27-amino acid leader peptide (Figure 2C
;   OTHER INFORMATION: )
US-11-017-185-22

  Query Match            100.0%;  Score 846;  DB 20;  Length 435;
  Best Local Similarity   100.0%;  Pred. No. 5.3e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 64
US-09-932-812-18
; Sequence 18, Application US/09932812
; Publication No. US20030082749A1
; GENERAL INFORMATION:
;  APPLICANT: Sun, Lee-Hwei K
;  APPLICANT: Sun, Bill N
;  APPLICANT: Sun, Cecily R
;  TITLE OF INVENTION: Fc fusion proteins of human erythropoietin with increased biologi
;  FILE REFERENCE: 02SUN2001
;  CURRENT APPLICATION NUMBER: US/09/932,812
;  CURRENT FILING DATE: 2001-10-30
;  NUMBER OF SEQ ID NOS: 22
;  SOFTWARE: PatentIn version 3.1
; SEQ ID NO 18
;   LENGTH: 436
;   TYPE: PRT
;   ORGANISM: Artificial Sequence
;   FEATURE:
;   OTHER INFORMATION: HuEPO-L-vFc gamma2 with a 27-amino acid  leader peptide (Figure 2
;   OTHER INFORMATION: A)
US-09-932-812-18

  Query Match            100.0%;  Score 846;  DB 10;  Length 436;
  Best Local Similarity   100.0%;  Pred. No. 5.3e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 65
US-10-761-593A-18
; Sequence 18, Application US/10761593A
; Publication No. US20040175824A1
; GENERAL INFORMATION:
;  APPLICANT: Sun, Lee-Hwei K
;  APPLICANT:  Sun, Bill N
;  APPLICANT:  Sun, Cecily R
;  TITLE OF INVENTION: Fc fusion proteins of human erythropoietin with high biological
;  TITLE OF INVENTION:  activities
;  FILE REFERENCE: 02SUN2001-A
;  CURRENT APPLICATION NUMBER: US/10/761,593A
;  CURRENT FILING DATE:  2004-01-21
;  PRIOR APPLICATION NUMBER: 09/932812
;  PRIOR FILING DATE: 2001-08-17
;  NUMBER OF SEQ ID NOS: 28
;  SOFTWARE: PatentIn version 3.2
; SEQ ID NO 18
;   LENGTH: 436
;   TYPE: PRT
;   ORGANISM: Artificial Sequence
;   FEATURE:
;   OTHER INFORMATION: HuEPO-L-vFc gamma2 with a 27-amino acid  leader peptide (Figure
;   OTHER INFORMATION: 2A)
US-10-761-593A-18

  Query Match            100.0%;  Score 846;  DB 16;  Length 436;
  Best Local Similarity   100.0%;  Pred. No. 5.3e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
```

```
                ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy         121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
                ||||||||||||||||||||||||||||||||||||||||||||||
Db         148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 66
US-11-016-518A-18
; Sequence 18, Application US/11016518A
; Publication No. US20050124045A1
; GENERAL INFORMATION:
;  APPLICANT: Sun, Lee-Hwei K
;  APPLICANT:  Sun, Bill N
;  APPLICANT:  Sun, Cecily R
;  TITLE OF INVENTION: Fc fusion proteins of human erythropoietin with increased
;  TITLE OF INVENTION:  biological activities
;  FILE REFERENCE: 02SUN2004D1
;  CURRENT APPLICATION NUMBER: US/11/016,518A
;  CURRENT FILING DATE:  2004-12-17
;  PRIOR APPLICATION NUMBER: US 09/932,812
;  PRIOR FILING DATE: 2001-08-17
;  NUMBER OF SEQ ID NOS: 28
;  SOFTWARE: PatentIn version 3.2
; SEQ ID NO 18
;   LENGTH: 436
;   TYPE: PRT
;   ORGANISM: Artificial Sequence
;   FEATURE:
;   OTHER INFORMATION: HuEPO-L-vFc gamma2 with a 27-amino acid  leader peptide (Figure
;   OTHER INFORMATION: 2A)
US-11-016-518A-18

  Query Match             100.0%;  Score 846;  DB 20;  Length 436;
  Best Local Similarity   100.0%;  Pred. No. 5.3e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
                ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
                ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
                ||||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 67
US-11-017-185-18
; Sequence 18, Application US/11017185
; Publication No. US20050142642A1
; GENERAL INFORMATION:
;  APPLICANT: Sun, Lee-Hwei K
;  APPLICANT:  Sun, Bill N
;  APPLICANT:  Sun, Cecily R
;  TITLE OF INVENTION: Fc fusion proteins of human erythropoietin with increased biologi
;  TITLE OF INVENTION:  activities
;  FILE REFERENCE: 02SUN2001D2
;  CURRENT APPLICATION NUMBER: US/11/017,185
;  CURRENT FILING DATE:  2004-12-17
;  PRIOR APPLICATION NUMBER: US 09/932,812
;  PRIOR FILING DATE: 2001-08-17
;  NUMBER OF SEQ ID NOS: 28
;  SOFTWARE: PatentIn version 3.1
; SEQ ID NO 18
;   LENGTH: 436
;   TYPE: PRT
;   ORGANISM: Artificial Sequence
;   FEATURE:
;   OTHER INFORMATION: HuEPO-L-vFc gamma2 with a 27-amino acid  leader peptide (Figure 2
;   OTHER INFORMATION: A)
US-11-017-185-18

  Query Match             100.0%;  Score 846;  DB 20;  Length 436;
  Best Local Similarity   100.0%;  Pred. No. 5.3e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
                ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
                ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
                ||||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 68
US-09-932-812-20
; Sequence 20, Application US/09932812
; Publication No. US20030082749A1
; GENERAL INFORMATION:
;  APPLICANT: Sun, Lee-Hwei K
;  APPLICANT: Sun, Bill N
;  APPLICANT: Sun, Cecily R
;  TITLE OF INVENTION: Fc fusion proteins of human erythropoietin with increased biologic
;  FILE REFERENCE: 02SUN2001
;  CURRENT APPLICATION NUMBER: US/09/932,812
;  CURRENT FILING DATE: 2001-10-30
;  NUMBER OF SEQ ID NOS: 22
;  SOFTWARE: PatentIn version 3.1
; SEQ ID NO 20
;   LENGTH: 437
;   TYPE: PRT
;   ORGANISM: Artificial Sequence
;   FEATURE:
;   OTHER INFORMATION: HuEPO-L-vFc gamma4 with a 27-amino acid leader peptide (Figure 2B
;   OTHER INFORMATION: )
US-09-932-812-20

  Query Match             100.0%;  Score 846;  DB 10;  Length 437;
  Best Local Similarity   100.0%;  Pred. No. 5.3e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
                ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
                ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
                ||||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 69
US-10-761-593A-20
; Sequence 20, Application US/10761593A
; Publication No. US20040175824A1
; GENERAL INFORMATION:
;  APPLICANT: Sun, Lee-Hwei K
;  APPLICANT:  Sun, Bill N
;  APPLICANT:  Sun, Cecily R
;  TITLE OF INVENTION: Fc fusion proteins of human erythropoietin with high biological
;  TITLE OF INVENTION:  activities
;  FILE REFERENCE: 02SUN2001-A
;  CURRENT APPLICATION NUMBER: US/10/761,593A
```

```
;  CURRENT FILING DATE:  2004-01-21
;  PRIOR APPLICATION NUMBER: 09/932812
;  PRIOR FILING DATE: 2001-08-17
;  NUMBER OF SEQ ID NOS: 28
;  SOFTWARE: PatentIn version 3.2
; SEQ ID NO 20
;   LENGTH: 437
;   TYPE: PRT
;   ORGANISM: Artificial Sequence
;   FEATURE:
;   OTHER INFORMATION: HuEPO-L-vFc gamma4 with a 27-amino acid leader peptide (Figure
;   OTHER INFORMATION: 2B)
US-10-761-593A-20

  Query Match            100.0%;  Score 846;  DB 16;  Length 437;
  Best Local Similarity  100.0%;  Pred. No. 5.3e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 70
US-11-016-518A-20
; Sequence 20, Application US/11016518A
; Publication No. US20050124045A1
; GENERAL INFORMATION:
;  APPLICANT: Sun, Lee-Hwei K
;  APPLICANT:  Sun, Bill N
;  APPLICANT:  Sun, Cecily R
;  TITLE OF INVENTION: Fc fusion proteins of human erythropoietin with increased
;  TITLE OF INVENTION:  biological activities
;  FILE REFERENCE: 02SUN2004D1
;  CURRENT APPLICATION NUMBER: US/11/016,518A
;  CURRENT FILING DATE:  2004-12-17
;  PRIOR APPLICATION NUMBER: US 09/932,812
;  PRIOR FILING DATE: 2001-08-17
;  NUMBER OF SEQ ID NOS: 28
;  SOFTWARE: PatentIn version 3.2
; SEQ ID NO 20
;   LENGTH: 437
;   TYPE: PRT
;   ORGANISM: Artificial Sequence
;   FEATURE:
;   OTHER INFORMATION: HuEPO-L-vFc gamma4 with a 27-amino acid leader peptide (Figure
;   OTHER INFORMATION: 2B)
US-11-016-518A-20

  Query Match            100.0%;  Score 846;  DB 20;  Length 437;
  Best Local Similarity  100.0%;  Pred. No. 5.3e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


RESULT 71
US-11-017-185-20
; Sequence 20, Application US/11017185
; Publication No. US20050142642A1
; GENERAL INFORMATION:
;  APPLICANT: Sun, Lee-Hwei K
;  APPLICANT:  Sun, Bill N
;  APPLICANT:  Sun, Cecily R
;  TITLE OF INVENTION: Fc fusion proteins of human erythropoietin with increased biologi
;  TITLE OF INVENTION:  activities
;  FILE REFERENCE: 02SUN2001D2
;  CURRENT APPLICATION NUMBER: US/11/017,185
;  CURRENT FILING DATE:  2004-12-17
;  PRIOR APPLICATION NUMBER: US 09/932,812
;  PRIOR FILING DATE: 2001-08-17
;  NUMBER OF SEQ ID NOS: 28
;  SOFTWARE: PatentIn version 3.1
; SEQ ID NO 20
;   LENGTH: 437
;   TYPE: PRT
;   ORGANISM: Artificial Sequence
;   FEATURE:
;   OTHER INFORMATION: HuEPO-L-vFc gamma4 with a 27-amino acid leader peptide (Figure 2B
;   OTHER INFORMATION: )
US-11-017-185-20

  Query Match            100.0%;  Score 846;  DB 20;  Length 437;
  Best Local Similarity  100.0%;  Pred. No. 5.3e-85;
  Matches  165;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         28 APPRLICDSRVLERYLLEAKEAENITTGCAEHCSLNENITVPDTKVNFYAWKRMEVGQQA 87

Qy         61 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         88 VEVWQGLALLSEAVLRGQALLVNSSQPWEPLQLHVDKAVSGLRSLTTLLRALGAQKEAIS 147

Qy        121 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 165
              |||||||||||||||||||||||||||||||||||||||||||||
Db        148 PPDAASAAPLRTITADTFRKLFRVYSNFLRGKLKLYTGEACRTGD 192


Search completed: August 23, 2005, 14:18:57
Job time : 67 secs
```

THIS PAGE BLANK (USPTO)